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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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THE SHIPPING OF THE WORLD.

The mercantile marine of the world, according to "Lloyd's Register," is represented by 28,422 vessels, having a tonnage of 29,043,728. Of this aggregate, Great Britain has 10,838 vessels and a tonnage of 14,261,254. Next to the British Empire ranks the United States, with 3,135 vessels and a total tonnage of 2,750,271. Germany has 1,710 vessels with a tonnage of 2,650,033. Following comes Norway with 2,380 vessels with a tonnage of 1,640,812; France, with 1,214 vessels, with a tonnage of 983,655; Sweden, with a greater number than France (1,433), but as they are smaller craft their total tonnage is only 637,272. Japan has 1,066 vessels, tonnage, 574,557. Holland, 406 vessels, tonnage, 530,277; Denmark, 802 vessels, tonnage, 416,084. Greece, Brazil, Belgium, Portugal, and Chile all have a tonnage in excess of 100,000. The steam tonnage of the British merchant navy is superior to that of all other countries combined, but nearly half the tonnage of the United States is made up of sailing vessels.

Lloyd's quarterly returns, issued early in October, 1900, demonstrate the enormous impetus given to shipbuilding in the United States, partly as the result of the cheapness of material, partly owing to a large demand for tonnage, but to a still greater degree the result of the marketing of American coal abroad, which is regarded as one of the most remarkable economic evolutions of the time.

According to the authority cited, the United States had, next to Great Britain, the largest amount of tonnage under construction at the end of the last quarter. The total for merchant ships—154,712 tons—is 36,000 tons more than France, and 42,000 tons more than Germany had at the same date. Hitherto the vessels built on the Great Lakes have not been usually taken into account when reviewing the world's ocean tonnage. They can not, however, be ignored in the future, as the deepening of the Canadian canals and the lengthening of the locks will enable large-sized vessels of moderate draft to pass easily into the St. Lawrence and thence to the sea. An example of the eligibility of vessels for lake service for classification under the head of "ocean-going" vessels was demonstrated during the month of October, when four steel cargo boats, each of 3,000 tons burden, passed down the connecting channels from Lake Erie to New York for service in the Atlantic coasting trade. At Cleveland and Detroit ten or more large ocean steamers are to be built during the winter, and at Chicago and other Lake ports contracts for various types of cargo boats for use on the high seas have been entered into.

The shipyards on the Atlantic seaboard have also taken on a new lease of life, and, as noted in the Monthly Bulletin for October, large number of "tramp" steamers are being constructed to compete with British and other vessels in all parts of the world. A new shipyard is just being completed at New London, Conn., and at this point it is intended to build a fleet of steamers for regular service between the Pacific coast and the Far East, in connection with the Great Northern and Northern Pacific railroads, and with the lake steamers of the Great Northern Company. At another yard, near Boston, the construction of the largest vessel for the United States Navy built in New England since the days of the wooden clippers has just been commenced. It is to be a cruiser of 3,200 tons displacement. Farther south, at Richmond, Va., a yard hitherto accustomed only to small craft has just been enlarged and equipped for the construction of the largest war ships, while on the Pacific coast preparations are being made for the establishment of a plant to compete with the Union Iron Works for work for the United States Navy. A New York paper recently announced that the New York Central Railroad Company is contracting to establish a regular service of ocean-going steamers in connection with this railway system, with a harbor terminus at Weehawken, opposite New York. It is also reported that the Baltimore and Ohio Railroad Company is about to acquire more vessels for the trans-Atlantic service.

Three protected cruisers, whose construction was authorized in the last session of Congress, are to be allotted to private builders during the course of a few weeks, each to have a displacement of 9,000 tons and to cost about \$2,500,000. At the beginning of the present year 49 war vessels were being built in the United States for the Federal Navy. At the same time a cruiser of 6,500 tons and a battleship of 12,700 tons were in the course of construction for the Russian navy. Thus the total of war ships "under construction" was approximately 136,463 tons, which, taken in conjunction with the indicated tonnage for merchant ships, shows a very considerable expansion of marine interests.

LORD KELVIN ON ALUMINUM CONDUCTORS FOR ELECTRIC TRANSMISSION.

The already practical foreshadowed widening use of aluminum conductors for electric transmission purposes adds interest to Lord Kelvin's recently expressed opinion of them. The weight of aluminum required, he said, is almost exactly one-half of the copper which would produce the same effect. The diameter of cable is 28 per cent. in excess of one made of copper, and the cost of insulation for an underground cable is increased in about the same proportion when we pass from copper to aluminium. Aluminium is not a pleasant metal to deal with, but its high conductivity will make it invaluable for overhead transmission. It is true also that the weight to be supported on posts is half of copper, but the surface exposed to the wind is greater, and its strength is not great. The chief drawback to its use, especially overhead, is its liability to become rotten. This defect does not exist if the metal be pure, and especially if free from sodium. But exposures to the atmosphere, especially near the sea, induces deterioration. The fact that aluminum is easily oxidized ought not to condemn it. The same is true of iron and steel, and yet we do not hesitate to place structures of these metals in exposed positions. Only we paint them, so Lord Kelvin proposes that we paint or varnish aluminum conductors wherever necessary. A few hundred yards of 1¼-inch aluminum wire were put up by Lord Kelvin on a Scotch estate somewhat over a year ago, and on this line he is watching the effects of weather.—From Cassier's Magazine for December,

LIQUID FUEL FOR STEAMERS.

Much interest has been manifested in the experience of a British steamship company, which has been making experiments with liquid fuel. The London Times announces the arrival of the steamship Cowrie of the Shell Transport and Trading Company, with a cargo of oil on the Thames, which steamed all the way from Koetei, in Borneo, to London—9,250 miles—using nothing but liquid fuel. The boilers for supplying the steam for the pumps discharging the cargo are fired by the same material. The oil is not burned by a thin layer of incandescent coal, as is the case in some systems, but is pulverized or reduced to spray by means of a steam jet at the furnace door, where it is delivered from furnace tanks above the boilers. The Cowrie was formerly fired with coal, and her conversion to liquid fuel has been attended with advantageous results.

Her complement of stokers has been reduced to six, as against sixteen necessary with coal, and her speed has at the same time been slightly improved. Moreover, the change has effected an important saving in bunker space, for her consumption of oil on this voyage was only 22 tons a day, whereas her daily consumption of coal used to be 35 tons, and a ton of oil is calculated to occupy only 34 cubic feet, against 45 feet required for coal. Oil, too, can be carried in the water-ballast tanks, and can also be taken on board much more quickly than coal. On a recent occasion 300 tons were pumped into a German steamer in one hour. The oil yielded by the Borneo fields forms an excellent fuel when used just as it comes from the ground, and is said to be superseding both the Russian and the American products in the Far East, where it is extensively used for fuel in the Hamburg-American boats engaged in the eastern trade. To give some idea of its cost, it may be mentioned that, according to the terms of a recent contract, it is to be delivered at the price of \$7.30 a ton at Singapore and Hongkong, \$7.90 at Shanghai, \$8.51 in Japan and Colombo, and \$12.16 at Suez. The Cowrie brought from Borneo over 6,000 tons of solar oil, the greater part of which is destined to be used by the Gas Light and Coke company for the production of oil gas for enrichment purposes, and it is an interesting fact that the vessel (or one like her) will be bunkered with the refuse that remains after the oil has been utilized in this manner.

Mr. Henry Fisher, assistant manager of the fuel oil department of the Standard Oil Company, in response to an inquiry from Modern Machinery as to the practicability of the Standard Oil Company engaging in similar traffic in this country, stated that "the price for fuel oil in the United States will not permit of its being used for steam purposes as against coal; the latter being decidedly the cheaper. With the eastern trade, however, the conditions are reversed, the price of coal being very high, and the price of oil considerably cheaper. This accounts for oil being used so extensively on steamers plying in the eastern trade."

A NEW system of fighting fires is being perfected in the Brooklyn navy yard. It was found that the salt water not only saves supply of fresh water, but will put out a fire much more quickly than fresh water will. The plan now being constructed will follow, on a larger scale, the plan of the one placed in the Norfolk navy yard some two years ago. At the Brooklyn yard the supply of water will be taken from the river at a point three feet below low water mark and will be carried by gravity through a main thirty inches in diameter to a new electric power house, where the reservoir and two driving pumps will be situated. Each of these pumps will be able to deliver, from 3,000 to 4,000 gallons per minute, through 14 or 15 streams of water, which can be thrown almost immediately upon receipt of the fire signal. This salt water method, where conditions permit, diminishes the chance of frozen fire hydrants in winter.



BUFFALO.

Special Correspondence to the Marine Record.

There will be no more regular freight rates. Some coal will go yet to Lake Michigan, and there was a charter made on Tuesday for Marquette, to be loaded at the Ohio rate, which was stipulated not to be less than \$1.00. Lake Superior business from the lower lakes is supposed to be at an end now. The cargoes for Toledo are having hard time. The schooner Maumee Valley, with Lackawanna coal for Toledo, went down off Point Pelee and drowned her entire crew, and the Reuben Doud, with a similar cargo, is ashore in the same vicinity. The barge Board of Trade with a Toledo cargo, is also lost.

Michael Mulligan, a lake steward in the employ of the Ogdensburg Transit Co., dropped dead in a down town store Monday night of heart disease. Mulligan was sixty years old and was one of the oldest men in point of active continuous service on the lakes. He made his first trip when he was fourteen years old. That was forty-six years ago, and he never missed a season thereafter. He sailed on every kind of lake craft and his friends say that no ship that left a port with Mulligan aboard ever was wrecked or suffered any misfortune. He has been a steward for thirty years. Of course Mulligan had nothing to do with piloting but the coincidence is worthy of remark.

The new fire boat brought up from the coast and named the W. S. Grattan, is probably the most modern and best equipped fire boat ever built. She is 118 feet long, 23 feet beam and has a draft of 11 feet. Her pumping engines, consisting of three double ones, were made by the American Fire Engine Co., of Seneca Falls, N. Y., and gave the boat a guaranteed capacity of 9,000 gallons per minute. Under increased pressure it is claimed that 11,500 gallons per minute can be pumped. The Grattan has three stand pipes, two in the bow and one aft. They are adjustable and can be fitted with nozzles ranging from three to five inches in diameter. In addition to this there are attachments for eighteen lines of hose.

The trial of the libel case growing out of the collision of the Siemens, North Star and Holly, in St. Mary's river, November 28, 1899, has been set by Judge Hazel for trial in Buffalo, December 11. The case is especially interesting, involving, as it does, certain rights of navigators in the matter of observation of river rules, both those fixed by law and those of recognized practice. The Northern Steamship Co., owners of the North Star, will be represented by John C. Shaw, of Detroit; Harvey D. Goulder, of Cleveland, and George Clinton, of Buffalo, will represent the Siemens. The collision resulted in the blocking of the "Soo" river from 6:30 a. m. November 28, to 5 p. m. December 1, and 167 vessels were held up.

Navigation closed on Tuesday at Montreal with the departure of the steamship Paliki for Avonmouth, England with a cargo of steel. Only twice before in the history of the port has an ocean vessel sailed in December from Montreal. In 1861 the last departure for sea was on Dec. 4, and in 1864 it was on Dec. 7. The Paliki was the last of four vessels belonging to the Algoma Central Steamship Co. which came down from the upper lakes with a cargo for Europe, the first vessel to do so. Marine insurance expires about the middle of November and it is well known that the navigation of the Gulf of St. Lawrence in early spring and late fall is the worst in the world, therefore, underwriters won't accept the consequent risks.

The Black Diamond in this week's issue says: "According to latest advices from Lake Erie coal shipping ports, there may be a cessation of further shipments of both anthracite and bituminous on account of the recent wrecks and disasters to large as well as small boats, having made vessel owners nervous about taking risks. And yet, almost in the same breath there is news from thence to the effect that prominent ore vessel interests are willing to accept charters for carrying grain from Chicago to Buffalo in January. If grain can be carried one way, there is no reason why coal cannot be forwarded in the other direction. It is merely a question of the expense of keeping open a passage way in the Straits of Mackinaw. The Russian government keeps open a line of ports in the Baltic all through the winter by the use of immense and ponderous steam ice-breaking vessels which are supplied with propellers at each end of them. If there, why not here on the chain of lakes? Unless there is relief in some direction, it becomes a matter for no speculation that some of the ports on Lake Superior and Michigan will be blockaded with ice before their winter supplies of coal are completed, which will necessitate all-rail shipments. Up in the Northwest, where cold weather has prevailed, the demand for coal of all kinds has been and is quite brisk, and shipments by rail have been so well maintained that stocks on dock are very much broken. This will account for the complaint from the Twin Cities of "coal coming forward slowly."

DETROIT.

Special Correspondence to the Marine Record.

The steamer Cumberland is disabled and the tug Lutz went to Bar Point early on Wednesday morning, to tow her to this port.

The wooden steamer Tacoma, of the Gilchrist line will tie up for the winter at the yards of the Detroit Ship Building Co., and receive new compound engines and general repairs before going out in the spring.

The schooner Dunford, belonging to John Stevenson of this city was sold on Wednesday to the Pittsburg Coal Co., of Cleveland for \$4,000. The Dunford will be stripped of her spars and used as a lighter for the coal company at Lorain.

During the month of November the marine post office handled 29,785 pieces of mail, of which 23,310 were delivered to boats. The passages reported for the month were 2,013. There were 37 money orders issued to boats, aggregating \$652.55.

The master of the steamer Boston reports that on Nov. 19, while bound down the St. Clair river, his vessel struck on the north end of the shoal, south of the Middle Ground, opposite St. Clair, Michigan, from which the red buoy on the south end of the Middle Ground bears N. 45° W. true (N. W. mag.), distant 250 yards. He found but fourteen feet six inches at this point.

The officers of the International Longshoremen's Union, D. J. Keefe, president, of Chicago, and H. C. Barter, secretary of Detroit, were in conference this week with the managers of South shore docks along Lake Erie relative to the winter schedule for loading ore into cars for shipment to the furnaces. It is expected that with a short conference on Thursday morning the session will close, and then Messrs. Keefe and Barter will proceed to Louisville, Ky., where they will attend a meeting.

While the details of an agreement have not been given out it is generally understood that the dock managers have consented to an advance in wages over last year. The scale in vogue last winter provides for seven cents a ton for loading ore into cars from the stock piles with machinery, and eight and a half cents a ton for loading by hand. The wages for day laborers were \$2 to \$2.10 per day for hoisters, and \$2.25 to \$2.35 for engineers. It has been agreed that an advance shall be granted in both of these scales. The new scale will affect all of the longshoremen along the entire south shore of the lake who will be employed in this trade during the winter.

The wrecked schooner J. S. Richards has been taken to Oades' shipyard and workmen are now engaged in sawing off the battered bow of the boat in order to give room for a bulkhead. Baker has been three weeks in raising the derelict from the American channel and the job has cost him \$2,500. It was done to avoid prosecution by the United States authorities on the charge of blocking the channel by towing the wreck from the Canadian channel where it sank after the collision with the steamer Moore. The former job cost Baker \$3,800 and Pickands, Mather & Co. and the underwriters, who got \$14,000 in pig iron from the wreck, have not paid Baker for its removal from Canadian waters. He lost, therefore, \$6,300. To make matters worse he was indicted by the United States grand jury on the charge of blocking the channel, and has that case to defend. He will now have to rent a place to store the old hulk as soon as it comes out of dry-dock.

Professor Willis Moore, chief of the Weather Bureau, has been conducting experiments in wireless telegraphy, with the assistance of three electrical experts, upon a secluded island within a day's journey of Washington, says a Washington dispatch to the Chicago Record. The work has been conducted secretly, and will not be disclosed to the public for several months. Professor Moore says that gratifying success has marked the experiments, and he feels warranted in predicting that in the near future the commerce upon the lakes and the vessels engaged in coastwise trade will be constantly in touch with the shore to report accidents to machinery or summon succor in case of fire, as well as to receive warnings from the Weather Bureau of approaching storms. "We are not saying much about the experiments at this time," said Professor Moore, "because we have determined to remain silent as long as there is any doubt whatever of the success of our system. I can say, however, that we have new apparatus, all our own invention. We are branching out on new lines, and the results so far accomplished have been gratifying in the extreme. We hope to complete the experiments during the next two or three months, and believe we will revolutionize shipping upon our lakes and along our coasts, by making it possible for the masters to maintain communication with the shore by our wireless system of telegraphy."

Chicago is threatened with a coal famine. The shortage of cars and the near closing of lake traffic has left the docks of several of the leading coal companies quite empty. A further advance in prices to the consumers is imminent.

The erection of a large steel car plant at Detroit, Mich., by the American Car and Foundry Co. is pretty clearly indicated by recent developments. Engineers are now said to be preparing plans and perfecting arrangements for the building of the shops, close by the peninsular works of the American Co.

CLEVELAND.

Special Correspondence to The Marine Record.

The steamer O. M. Poe went to Lorain this week, to go into winter quarters. A large number of big carriers will be laid up at that port.

The Detroit & Cleveland Steam Navigation Co. is planning to run its boats another week, if the present weather keeps up. It was the original intention to place them in winter quarters on Saturday evening.

A large number of boats have gone into winter quarters, but there is a great deal of tonnage still afloat. The transportation service meets all requirements, and the low rates of freight now being offered.

There is yet at least ten days of open navigation, as the weather is keeping considerably mild at this end of the lakes. Ore is still being shipped. Coal is going forward and grain with a quantity of lumber is being transported eastward.

A meeting of the executive committee of the Lake Carriers' Association will be held the latter part of this week. It is expected that they will map out the work to be proposed at the meeting of the Lake Carriers' in Detroit in January.

R. L. Ireland, vice president of the American Ship Building Co., has gone South to spend a two months' vacation, and incidentally to get a well earned rest. In the last five months he has made a splendid record in making shipbuilding contracts.

The old scow which sank in the river opposite the river custom house, has been raised and no longer obstructs navigation. The spiles have also been taken out so that the channel is once more clear. It comes too late, however, to do much good this year.

The representatives of the ore handlers at Lake Erie ports and the dock managers are in conference, although no settlement was reached on Wednesday, both sides are confident that a schedule of wages will be agreed upon in a day or two. An effort is being made to have a uniform rate of wages for all the ports, and as soon as a plan is decided on, the rate question will not take up much time.

The announcement has been made by the Detroit & Cleveland Steam Navigation Co., that the last regular run will be made out of this city for Detroit Saturday night. The season has been one of the most profitable that the company has ever known. The boats will be taken to Detroit and laid up for the winter. It may be possible that the City of Cleveland will make an extra run out of here on Monday night, but this has not been definitely decided.

The steamer City of Cleveland of the Bradley fleet was placed on Monday for ore from Escanaba to Ohio ports at \$1 and that will probably be the last charter made this season. She will load early next week. Lake Michigan coal shippers are still figuring on taking tonnage and if the weather is favorable vessels that are now on the way down will be chartered for another trip, which means that they will not be able to get their cargoes until the end of the week.

Incorporation papers were issued by the Secretary of State at Columbus, this week, for the formation of a new steamship company on the lakes by the name of the Globe Steamship Co., with headquarters at Mentor. Of this the incorporators are: J. C. Gilchrist, A. J. Gilchrist, J. H. Osborne, Frank W. Hart, and F. R. Gilchrist. The capitalization is \$1,000,000. The statement was made by Capt. J. C. Gilchrist last evening that this is the organization formed to manage the six new boats, which were recently ordered, and which will be built during the winter and launched next spring.

The Iron Trade Review says that after a week's struggle against freezing ore and unusually thick ice in the harbors at the head of the lake, ore shippers have been getting their boats out for their final down trips in the past week. Apart from Lake Michigan cargoes, which will probably continue to come for a week or more into December, the close of the month will see the end of the season's programme with most shippers. The recent delivery of a cargo of Michipicoten ore at Ashtabula, O., is noteworthy, and the expectation is that this ore will find a place in Central Western furnace mixtures in the coming year.

In a few days Mr. Burton's committee, which is now preparing the river and harbor bill, will take up the question of authorizing the appropriation which is desired to carry out the new breakwater project. Among other things, it was decided to incorporate sections relating to Fairport, Conneaut, Sandusky, and Huron, and tentatively fix the amounts to be recommended for appropriation at approximately the sums given in the foregoing estimates of Secretary Gage. The committee expects to have its bill ready for introduction next Tuesday or Wednesday if the House is ready to take it up for consideration then.

The work on the new breakwater at Fairport is about at an end for this season, and some good results have been attained. The plan is to build two breakwaters, one to the west of the mouth of the river and the other on the eastern side both being placed oblique to the channel. Only one side, has been worked on so far, the western half, and while this is to be 2,000 feet in length, they have but 828 feet of it done. The cribs are down for this much, and the superstructure has been raised above them. Yet with this one half of the first side of the harbor protection built, Col. Smith, Corps of Engineers, U. S. A., says that the results already achieved are very satisfactory. For instance, he says this is the first November in the history of his service on the lakes, covering a period of nine years, in which they have not done

dredging in that port. At all other times it has not been necessary to dredge away a bar that formed with great persistency at the mouth of the river. He explains this by the action of the waves. Most of the winds come from either the west or the northwest, which drive the sands right directly across the mouth of the river, where they sink and are formed into a bar. The seas from the east are few. The building of the west arm of that breakwater, he thinks, has prevented the formation of a bar by making it impossible for the sand to be deposited. Colonel Smith also shows a plan, with 432 feet of the new breakwater built, less dredging in three years than they used to do.

Plans for river and harbor work at ports in Col. Mansfield's (formerly Col. Smith's) district, are: At Cleveland, \$100,000 for breakwater extension, and \$160,000 for harbor dredging; at Ashtabula, \$210,000; at Lorain, \$150,000; at Toledo, \$250,000; at Conneaut, \$210,000; at Fairport, \$210,000; at Huron, \$50,000; at Port Clinton, \$9,000; at Sandusky, \$125,000. Estimates for some of the other important projects along the lakes are: For completing light and fog signal station at Toledo, \$62,500; for constructing light-keeper's dwelling at Port Clinton, \$3,000; for constructing light-house tender in the Tenth district, which takes in Cleveland, \$120,000; for constructing tender for use in St. Mary's river, \$60,000; for improvements and new water supply at Cleveland Marine Hospital, \$12,000.

A dispatch from Chicago says: The recent sale of a round one dozen of steel freight steamers to the American Steel & Wire Co., is causing a deal of exciting talk among stockholders of the company. Statements have been boldly made that the steamers were old, out of date and not equal to the performance of carrying ore as cheaply as the improved boats now being turned off the stocks. The above statements are absolutely incorrect. Of the fleet the steamers John W. Gates, William Edenborn, Isaac Ellwood and James J. Hill are perfect types of the modern monster carriers of the Great Lakes. They are longer, larger and have more power than any of the celebrated Rockefeller fleet, and are fully equal to the recently constructed Carnegie-Oliver fleet. The remainder of the fleet, Superior City, Crescent City, Empire City, Zenith City, Palmer, Wolvin and Gilbert are vessels of smaller capacity, but well built, of great power and fully equal to any steamers built previous to 1899. This much for the character of the boats. The wire company stockholders, however, appear to have cause for complaint in regard to the price paid for the fleet. Contracts could be made to-day to duplicate the fleet for figures somewhat less than \$4,000,000. It appears, however, that although shipbuilding yards would take contracts to build the fleet at the above figures, no guarantee will be given for delivery of any of the boats until late in 1901. This delay would cause the losing of next season's carrying business. It also appears that many of the stockholders of the company selling the vessels are growling and raising objections to the sale, not so much on account of the price paid for the fleet, which is \$5,250,000, as because they are compelled to take their pay in a twenty-year 5 per cent. bond. All in all, considering that the fleet is available for next season's tonnage, and the long terms of payment, the transaction seems to have been a fair one to the wire company. Capt. A. B. Wolvin, of Duluth, under whose specifications and superintendence the fleet was constructed, is spoken of on all sides as an expert of high standing and great experience.

CHICAGO.

Special Correspondence to The Marine Record.

Capt. Alex. R. Sinclair, vessel and insurance agent, of Duluth, was in this city on Tuesday.

The Holland & Chicago Line have closed their season's work. Their steamer Soo City having left here on her last trip Sunday night.

Of the Rutland liners the Haskell, Prince, Frost and McVittie will winter at Chicago and the remainder of the fleet at Ogdensburg.

Grain freights were brisk Monday and Tuesday at 3 cents on corn and 3 1/4 cents on wheat, and a large quantity of corn and wheat tonnage was chartered.

The Northern Michigan Line steamer Illinois, Capt. Wm. Finucan, which arrived here Monday with a full cargo of merchandise, will make one more trip before going to Manistee to lay up.

Capt. Henry Stines, the well known commander of the Virginia, went into commission again on Dec. 1st, on the steamer Iowa, vice Capt. Raleigh, who went home to spend the winter on his farm.

The steamer Alice Stafford, which may be regarded as good as sold to the Barry Bros., is being laid up for the winter. The price for which the steamer will change hands is either \$35,000 or \$40,000.

The lightship from Eleven-foot shoal was taken into Escanaba on Wednesday. It is thought that this is too early a removal of a prominent aid to navigation, however, the same kick comes in every season.

Users of ropes in power transmission will be especially interested in a new preparation being placed upon the market by Somers, Scott & Co., of Chicago. It is a liquid compound which under the influence of heat becomes sufficiently fluid to be readily applied with a brush to the surface of the rope. The ingredients used are chosen because of their known value for preserving, strengthening and prolonging

the life of rope fiber. It is waterproof and renders the rope supple and pliable. Its fluidity permits of an even application as well as of great economy in its use. The packages are convenient for shipments.

At the close of last week Chicago public and private elevators contained 27,195,000 bushels of grain, as follows: Wheat 17,304,000 bushels, corn 2,655,000 bushels, oats 6,286,000 bushels, rye 653,000 bushels, barley 297,000 bushels.

The Graham & Morton Line will close the season of 1900 on Tuesday, December 11. Their steamer City of Louisville will leave here for St. Joseph and Benton Harbor on her last trip this year, on Tuesday night and will go into winter quarters.

Some Milwaukee shippers have expressed their opinions freely as to the condition of the coal supply there, and say that if coal does not arrive any faster by lake they will be obliged to have anthracite all-rail by Jan. 1, to supply the local trade.

The Firemen and Linemen Tug Boat Association of Chicago will give their first ball and reception at Brand's Hall, Erie and Clark streets, Saturday evening Dec. 22nd. The Association intend to pay a death benefit of \$100 for all members in good standing at the time of their decease.

Capt. James Hogan left here Monday afternoon with the steamer Albert Soper, for Sturgeon Bay, where she is to receive a general rebuild from below the shear stake up, by Reiboldt and Wolters. The same firm also have the steamer Philetus Sawyer at their shipyard for a thorough rebuild.

The steamer F. and P. M. No. 1 was taken off the Chicago-Muskegon route, on November 30th. The F. and P. M. No. 1 was put on the Chicago-Milwaukee route on December 1st, in the place of the steamer State of Michigan, which steamer has since gone into winter quarters. She is to receive a general rebuild and an additional upper cabin during the winter months.

James A. Calbick & Co., vessel agents, sold the barge S. M. Stevenson, for Bigelow Bros., to Capt. James Sanford and others, of Muskegon, consideration \$8,000. The Stephenson is to be converted into a steamer by Burger & Burger, Manitowoc. She is to receive the machinery and boiler of the steamer Cleveland, also her cabin. The Stephenson and Cleveland will be towed from this port to Manitowoc this week, by the steamer Matthew Wilson.

The Goodrich Trans. Co.'s steamer Sheboygan went into winter quarters Nov. 30th, at Manitowoc, where the company's steamers Virginia, Christopher Columbus and Chicago are also in winter quarters. The company have the steamers Indiana, City of Racine, Iowa and Georgia running on the West shore route, and the Atlanta on the East shore route. The last trip to Green Bay City will be made this week, but one of their steamers will run to Marinette, Menominee and Escanaba so long as the weather will permit. The Atlantic will discontinue to run on the East shore route on December 10th, and will be put on the West shore route, and one of the company's other steamers will go into winter quarters.

The underwriters are doing fairly well in insuring December grain cargoes. With the rate at 1 per cent. the shipments have been heavy and the premiums have mounted up to a large figure. On the Rensselaer's cargo \$1,140 was paid. On the cargo of the Australia the excess insurance which the owner must pay, amounted to about \$900. Thus far there has not been a single loss on any of the grain cargoes, and the outlook is that with the continuance of favorable weather, the only expense the underwriters will be put to will be the stamps on the policies. Of course, the risk is always possible until the delivery of the cargo at its destination, and it takes a good many premiums to pay or cover a large total loss.

The steamer Nicaragua, which will probably have the distinction of taking the last cargo of grain out of this port this year, is having considerable difficulty in getting fairly started. She was delayed in loading at the elevator while the question of the grade of grain in her cargo was being settled. The steamer finally got started on Wednesday evening, but when Washington street tunnel was reached she came to a sudden stop owing to the lowering of the water in the river by the west wind. Additional tugs were immediately ordered to try to haul her over the obstruction, but up to a late hour she was still stuck. The tugmen expect, however, to get her clear by Thursday night. There are, however, several other cargoes chartered for, and no doubt other boats will be loaded here before the Straits of Mackinac freeze over.

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record.

It is stated here that arrangements are now being completed for the construction of steel ships on the lakes on a large scale for ocean service. These ships will not be limited in size to the length of new Canadian canals, but will be of any length wanted by buyers. Six or seven large and completely equipped yards on the lakes are in the scheme. The lake shipbuilders have now drawn plans for ships of from 350 to 650 feet in length, but of no greater width than 43 feet, which they have submitted to ocean shipowners. They have also submitted their designs to the bureau of navigation, and it has been approved. The plan is to build ships of a greater length than the present locks will carry, in sections, join them temporarily in the ship yard, run them down the Great Lakes and to Montreal, and then put them together. Orders for several vessels, it is said, have already been placed for construction this winter.

A marine gasoline engine of the kind manufactured by the Lake Shore Engine Works, of Marquette, Mich., will have a place in the exhibit of the United States life-saving service at the Buffalo exposition. This engine has proved highly successful in tests of life-boats in the roughest kind of weather. A 6 horse-power engine manufactured by the Marquette Co., is carried by small sailing craft for the purpose of avoiding tug bills in entering and leaving port. This engine will undoubtedly come into general use for tenders.

Certain stockholders of the American Steel & Wire Co. are much dissatisfied with the proposed purchase of the fleet of the American Steamship Co. on the lakes chiefly because it is proposed to issue \$5,000,000 of bonds for the payment of the same, and that this would operate to make the preferred stock of the company a second obligation and reduce the value of the common stock to merely a nominal figure. For this reason a bill has been prepared and an injunction will be asked in New York in behalf of these stockholders to restrain the American Steel and Wire Co. and its board of directors from purchasing the property of the American Steamship Co., which operates a line of steamers on the lakes, and to restrain the American Steel & Wire Co. and its board of directors from issuing bonds for \$5,000,000 and from guaranteeing an issue of bonds of the same amount of the American Steamship Co. with the proceeds of which the American Steel & Wire Co. propose to take over all the shipping interests of the American Steamship Co. on the lakes.

LETTERS AT DETROIT MARINE POST OFFICE.

December 5, 1900.

To get any of these letters, addressees or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of this list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

- | | |
|------------------------------|------------------------------|
| Arnold Wm. S. | Myers Frank, Lozen |
| Aberyard Robt., Maxwell | McLain M. J., Sch. Donaldson |
| Bols Theodore | McDonald Geo., Admiral |
| Bentley Frank | McIntyre Geo. |
| Bissebois Art, Yankee | McCarthy Wm. |
| Blaine T. J., Choctaw | O'Connor M. H. |
| Brant Stewart | O'Connor Michael, Donaldson |
| Blauvelt Clark, Sitka | Priest Hattie, D. R. Martin |
| Brown Rose D., Bissell | Pringle Capt. W. J. |
| Coates S. D., Dunbar | Ryan Wm., J. B. Wilber |
| Carr Arthur, Peck | Rossman J. J., 2, Liberty |
| Campbell Donald | Stark Will |
| Coleman Jos. E., Choctaw | Spaulding Will, Iron Age |
| Christofferson Olaf | Smith Robt., Adams |
| Durfey Samuel, 130 | Stockwell Amos |
| Erwin Jno. A., 2, Uganda | Strong Jno. |
| Ellisison Chas., Blanchard | Smith Ralph T. |
| Hayes Wm., Pontiac | Sterrett E. C., Boscobel |
| Irvine L. H. | Shelby Aug. J. B. Wilbor |
| Jones Henry, Arabia | Spencer Harry, Doud |
| Kearns Chas. J. | Tallman A. |
| Kendall Wm. A. | Towne Geo. R. |
| Lowels Sidney | Titus Burrell |
| Lambert Bert | VanKuren Chas. |
| Leith Capt A., D. R. Martin | Wright Samuel |
| Mulloy Wm., Ogema | Wilson Thos. |
| Morrill J. V., Pontiac | Wills Geo. |
| Monroe Jas., Pontiac | Washburn Jno., Hiawatha |
| Merrill Oren | White Chas., Glidden |
| Moose Mrs. E. C., 2, Martini | Walker Frank |

F. B. DICKERSON, P. M.

COAL DUST AS FUEL.

Experiments were made in Switzerland on the use of coal dust as fuel for steam boilers in 1896 at the Berne small arms factory, under the superintendence of the Swiss Society of Boilerowners. The boiler used was of the Sulzer-Cornish form and the "Mehl" grate and Wegener system of firing were both tried. The report of the society showed that the dust could be burnt smokelessly with a thermal efficiency of 20.93 per cent., and a saving in cost of steam of 15.5 per cent. The grinding of the coal to form the dust was found to be the most expensive part of the process.

At the Polytechnic, at Zurich, the Wegener system was used for a time in an old boiler, but was given up, as it was feared the excessive heat produced would injure the furnaces. The boilers require to be specially adapted for dust burning. For successful results the dust must be in the form of very fine powder, and if the coalbe damp it is difficult to grind.

A table has been prepared based upon the results obtained at the cement works at Ehingen as compared with firing in a Ten-Brink furnace, and the cost of the former appear very favorable, as the dust firing enabled a very cheap kind of coal to be used. It appears, however, that the coal-dust firing has been subsequently given up, not, however, owing to inherent defects in the system, but because the excessive heat produced by the dust was localized so much that it caused damage to the furnaces of the Ten-Brink boilers, which had not been specially designed for the use of dust, but merely temporarily altered for the purpose.

If any decent freights are offered tonnage will be kept moving, although insurance has been withdrawn on hull, cargoes and freight.

TOPICS BY NAVAL ARCHITECTS.

WITH MARINE ENGINEERS THEY DISCUSS SUBJECTS OF INTEREST TO EVERYBODY.

It was an exceptionally interesting meeting of the Society of Naval Architects and Marine Engineers, which was held last week at the society's rooms at No. 12 West Thirty-first street, New York. This eighth annual meeting and the banquet which followed it at Delmonico's, constitute an event which will be pleasantly remembered. The papers read were by men who have achieved eminence in their respective professions and were all of unusual interest and value. There were notable foreign visitors present, among them, Lieutenant-Commander De Faranaud of the French navy, Lieutenant-Commander Von Rebeur Paschwitz of the German navy, Capt. Stchensnovitch, Capt. Beher and Naval Constructors Tchernigvosky and Makedonsky of the Imperial Russian navy.

The opening address of the chairman, Clement A. Griscom, president of the International Navigation Co. (American Line), was full of hope and encouragement for all friends of American shipping. "During the fiscal year of the government which ended in June," said Mr. Griscom, "eighty steel steam vessels of 167,948 gross tons were built in the United States. These figures are modest compared with Great Britain's output of 567 steam steel vessels of 1,341,425 gross tons during the year; but they are full of encouragement when put beside the fact that during the previous nine years the United States built only 574,802 gross tons of these types. Nearly all our shipyards have been busy, every large plant has increased its capacity, and several new shipyards have been established and equipped for the construction of the largest merchant and war vessels. The new ship and engine building yard of noble proportions on the Delaware is prepared for work, and its novel applications of mechanical science to shipbuilding have already aroused the interest of the students of marine architecture here and abroad. A new and extensive plant on the Pacific coast will soon begin operations, and on the Thames, in Connecticut, the keels of two of the largest steamships ever built will soon be laid. Plants in the South are increasing their facilities, and under favorable conditions steel shipbuilding promises to become one of our distinctively national industries." Mr. Griscom added that since June there had been launched, begun or contracted for, seventy-eight steel steamships of 350,000 gross tonnage. The hopeful note in Mr. Griscom's remarks as to the future of American shipbuilding was warmly applauded.

Charles H. Cramp, the great shipbuilder, spoke interestingly and instructively of his recent creation, the Russian Variag. Mr. Cramp in his remarks fondled this great warship as he would a pet. He was quite right in saying that the building of this cruiser was so much of a step in advance of shipbuilding as to justify the attention of the society. The high performance of the cruiser was due to the most perfect adaptation of her form or model to the attainment of the extraordinary speed required; to the excellent performance of her engines and boilers, and also to the best and most equitable arrangement of structural appliances in her hull to secure the greatest strength with least weights, and to the fact that in her design every pound of weight was put where it would do the most good. The fine modeling of the hull was shown in the fact that 24 knots, over a ten-knot course, was attained with 18,000 indicated horsepower, and the speed of $23\frac{1}{4}$ knots was easily sustained for 12 consecutive hours with a mean I. H. P. of 16,000. He directed attention to the fact that no full speed-trial has hitherto been required of 12 hours' duration under natural draft, and also that nothing approximating the speed developed by the Variag has ever before been attained in any vessel or required by any contract to be effected under natural draft alone. Mr. Cramp quite pertinently observed that the extraordinary performance of the Variag under the remarkable conditions that were imposed cannot be taken by our government as a standard, if they adhere to the scale of statutory limitations of cost hitherto incorporated in the Acts of Congress authorizing naval vessels. The Russians, while making drastic requirements, were also willing to pay the price necessary to obtain what they wanted. This was a gentle hint which ought not to be lost on Washington. If we want the best goods, we should be willing to pay the shot.

In his paper, "Recent Designs of Battleships and Cruisers for the United States Navy," a subject of popular interest just now, Rear Admiral Philip Hichborn, chief constructor of the Navy, who is also vice-president of the society, gave some particulars concerning the armored cruisers, six in

number. They will have a length of 502 feet, beam 69 feet 6 inches, and a trial displacement of 13,400 tons on 24 feet 6 inches draft, the coal bunker capacity being 2,000 tons. They are designed for a speed of at least 22 knots, and will have a very large radius of action. The engines will be of the vertical, twin-screw, four-cylinder, triple-expansion type of a combined I. H. P. of 23,000. The steam pressure at the engines will be 250 pounds. The stroke will be 4 feet. There will be 30 boilers of the straight, water-tube type, placed in eight water-tight compartments. They will have at least 1,590 square feet of grate and about 68,000 square feet of heating surface. The protected cruisers will have a length of 424 feet, beam 66 feet, and a trial displacement of 9,700 tons on 23 feet 6 inches draft, the coal bunker capacity being 1,500 tons. The engines will be of the vertical, twin-screw, four-cylinder, triple-expansion type, of a combined I. H. P. of 21,000. The steam pressure will be 250 pounds. The stroke will be 45 inches. There will be 16 boilers of the straight, water-tube type, placed in four water-tight compartments.

Other papers read are:

"Capacity Test of a Unique Form of Air Pump," by F. Merriam Wheeler. "Interchangeability of Units for Marine Work," by W. D. Forbes. "The United States Experimental Model Basin," by Naval Constructor D. W. Taylor. "The Composition and Classification of Paints and Varnishes," by Prof. A. H. Sabin. "Tests of the Electrical Plants of the Battleships Kearsarge and Kentucky," by Naval Constructor J. J. Woodward. "Coaling of the U. S. S. Massachusetts at Sea," by Spencer Miller. "Notes on Recent Improvements in Foreign Shipbuilding Plants," by Assistant Naval Constructor H. G. Gillmor. "Can the American Shipbuilder Under Present Conditions Compete with the British and German Shipbuilders in the Production of the Largest Class of Ocean Passenger and Freight Steamships?" by Geo. W. Dickie. "Classification Rules," by Theodore Lucas, Esq. "A Comparison of the Contract Prices of our Naval Vessels," by Harrison S. Taft. "Launch of a Cruiser and a Battleship," by James Dickie. "The Safety of Torpedo Boats at Sea and in Action Under Various Conditions," by Naval Constructor Lloyd Bankson.

Walter A. Post was elected a member of the council, there being no other change in the officers from last year.

The banquet Friday night at Delmonico's was a success in every particular. A large number of the participants were well known to each other, consequently all went as merry as a marriage bell. President Griscom, as toast master, was unusually happy in the choice of appropriate reference to those he called upon for remarks applicable to the occasion. The speakers themselves were also in good trim. As we remember, Hon. A. J. Cummings was the first, followed by Col. Snowden, Lewis Nixon, J. W. Miller, Constructor J. J. Woodward, Stevenson Taylor, Chas. H. Cramp and Constructor F. T. Bowles, each of whom handled his theme in a happy and felicitous manner. The following members and their guests were present at the banquet:

Clement A. Griscom, president; Lewis Nixon, Chas. H. Cramp, Col. Snowden, Col. J. J. McCook, Hon. A. J. Cummings, L. Katzenstein, J. Katzenstein, W. M. McFarland, F. Merriam Wheeler, M. P. Levianthal, W. H. Jaques, J. W. Miller, Saml. J. Clarke, W. D. Forbes, Horace See, A. G. Smith, R. C. Veit, Jarvis B. Edson, Capt. H. S. Ross, Geo. E. Weed, Chas. H. Loring, W. W. Ackerman, Douglas G. Moore, M. F. Moore, Chas. Ackerman, Thos. Congdon, Mr. Mancor, John F. Dallas, J. R. Andrews, Wm. Wish, G. Sims, W. D. Dickey, Geo. L. Norton, Walter B. Pollock, Prof. A. J. Maclean, W. J. Baxter, Col. A. E. Stevens, Frank B. King, Carroll S. Smith, Andrew Fletcher, Jr., Stevenson Taylor, William H. Fletcher, Julius Johnson, John Lloyd, Henry Steers, Warren E. Hill, H. Konitzky, W. H. Deming, Chas. B. Rowland, Geo. Rowland, W. L. Babcock, W. J. Chalmers, Wm. A. Dobson, E. H. Whitney, H. B. Roelker, A. W. Goodrich, Gardner Williams, J. W. Kellogg, J. G. Emmons, J. J. Lynn, Jos. Barre, John C. Kafer, L. D. Davis, F. T. Bowles, W. L. Capps, Geo. P. Wilson, J. J. Crain, Howard Pusey, Major Wiley, Aaron Vanderbilt, Homer Ferguson, L. Jessup, P. Symington, A. R. Smith, F. H. Stillman, Saml. Putnam, Wm. H. Harrison, C. M. Englis, Jas. T. Boyd, E. P. Robinson, Mr. Frazer, Thos. F. Rowland, Thos. F. Rowland, Jr., Wm. F. Palmer, Wm. Rowland, B. F. O'Connor, E. E. Roberts, E. Platt Stratton, Saml. W. Stanton, H. A. Magoun, M. Farquesson, Chas. W. Martin, Jr., J. G. Tawressey, C. P. Wetherbee, J. J. Woodward, C. P. Paulding, Lawrence Spear, J. F. Kane, W. Ancker, H. G. Skinner, E. McIntyre, J. H. Clark, J. H. Linnard, G. R. Tuska.

On Saturday morning, upon the invitation of Messrs. Wm. Cramp & Sons Co., a special train left Jersey City for the great shipyard on the Delaware, where members of the society to the number of 150 were afterward royally entertained by their hospitable hosts, and given an opportunity to witness ship and engine building on a scale of magnitude second to none in this country.

A NEW LIFE-SAVING BOAT.

Lieut. C. H. McLellan, of the United States Life-Saving Service, is to conduct another series of tests of the regulation 34-foot life boat which has been equipped with a 12-horse power gas engine manufactured in Marquette. The craft has already been tried in all weathers and under all conditions, and now it is the intention to operate it during the progress of the rough fall weather to determine finally what, if any, are its deficiencies. To date all tests have been uniformly successful, and there is no reason to expect anything but a similar result from those now projected.

Lieut. McLellan is satisfied that the gas-propelled life-boat is entirely practicable, and that it will be an innovation of inestimable value to the service, while his superiors are also about convinced of this point. The lieutenant went to Marquette to settle definitely some questions about the stability of the new craft. The situation is this: The service has available 18 34-foot life-boats similar to that which is now being tested. It is desired to equip all these with gas engines, but it is also desired that no mistakes be made in installing the new motive power.

The 12-horse power engine in use in the Marquette boat is located right in the stern of the craft. Of course, its considerable weight completely changes the conditions which obtained when the boat was driven by oars. It was Lieut. McLellan's mission to ascertain the exact extent and nature of these changes, and their effect on the stability of the boat in all conditions of weather. Experiments to date have gone to show that the craft is more stable in heavy seas and heading into heavy winds with the power equipment than it was when driven by oars. If the lieutenant's observations bears this fact out his report will doubtless be entirely favorable to the proposed change, and there is no reason to believe that what has proved true through the past several months will be contradicted during the next few weeks. Lieut. McLellan's position regarding the proposed innovation is well known. He is heartily in favor of it and considers that it would be one of the biggest steps forward in the history of the life-saving service. Capt. Cleary, of the Marquette life-saving station, has an unqualified indorsement of this opinion. He has tried the experimental boat in all sorts of weather. He has taken it into storms against which an oar-propelled boat would have been helpless. He has always found it easy to handle and maneuver and, with it, he is prepared to brave any storm, regardless of its severity, on a life saving mission.

Capt. Cleary gave the boat the hardest test it has received to date in the fierce blow that raged all over the Great Lakes last week. That day the harbor was full of ore carriers in for shelter. Not a single skipper could have been induced to brave the angry seas. The breakwater was fairly submerged about half the time. Into this chaos of wind and wave Capt. Cleary and his crew plunged with dauntless spirit, and a confident reliance on their gas propelled life-boat. Straight out into the lake they pushed. Now they were held aloft on the crest of a towering wave, only to be dropped completely out of sight in the hollow between it and its following roller.

The boat's performance was wonderful. A speed approximating six miles was maintained, while it rode the breakers like a duck. No solid water was shipped, only spray. The weight of the engine in the stern seemed an advantage. It held the prow of the craft somewhat higher than is usually the case, which allowed of an easy progress. The boat ran with the sea, against the sea and into breakers rolling about hidden reefs. It was handled with the greatest ease under all conditions. The engine worked perfectly. Capt. Cleary expressed his entire satisfaction with the test.

It is believed by all who are following the matter that the new boat will shortly be adopted in the service. Then can marines feel assured of aid under conditions which now would certainly mean that they would have to shift for themselves. To quote an instance: Last Thursday Capt. Cleary could have run 12 miles out into the lake to rescue the crew of a foundering vessel. With an oar-propelled life-boat, if he could have succeeded in rounding the breakwater, he would have done nobly had he succeeded in keeping the life-boat's head into the storm, to say nothing of making progress against it.

COLLISION OF THE DAHLGREN AND CRAVEN.

Following is the opinion of the court of inquiry, convened by the Department's order of the 29th day of October, 1900, which investigated the collision between the torpedo boats Dahlgren and Craven.

The court is of the opinion that the collision was due to the following causes:

1. The Craven, previous to the collision was not maintaining a proper or safe position in case of a sudden change of course by the Dahlgren to the side on which the Craven was—that being the side towards which, in the circumstances, a change was expected.

2. The two boats being in such relative positions, and a change of course to port being properly made by the Dahlgren, collision was almost unavoidable unless the Craven had changed course immediately after the Dahlgren.

3. To permit this change of course quickly and safely, a very perfect lookout should have been kept aboard the Craven; but this was not done. There was but one lookout stationed and he left the starboard side and went over to port when a lookout to starboard was most necessary. Though he could see the Dahlgren across the deck, he had no special orders to observe her movements, and apparently, did not do so. The only other lookout was the commanding officer, himself, and he, at the moment of change of course by the Dahlgren, and at the moment when such a change was imminent and to be expected (as Castle Hill was a turning point) left the boat without a directive authority on deck and went into the conning tower to look at the chart. This was a thing unnecessary under the circumstances. This absence at so important a juncture and in the circumstances was not only unwise and improper in itself, but the observation of the chart under a light necessarily disabled the commanding officer's power of vision on his return to deck almost at the instant of the collision.

The opinion of the court, therefore, is that Lieut. Ford H. Brown is mainly responsible for the collision. His dangerous position with reference to the Dahlgren was of his own choosing, as the understanding between the commanding officers of the two boats was that the Craven should "follow" the Dahlgren. Being in such a position he should have recognized the necessity of absolute vigilance. His endeavor to look at the chart at such a moment was a most serious error of judgment. Any anxiety as to position or depth of water was at the time uncalled for and should not have drawn his attention from the much more pressing danger of the situation in which he had placed himself. His desire to observe the chart, while worthy in itself, was inopportune and ill-judged; and this error of judgment caused him improperly to hazard the Craven, under his command, and produced the collision with the Dahlgren, which latter boat had the right of way.

In the opinion of the Court further proceedings should be had against Lieut. Ford H. Brown, and that officer should be tried by a general court-martial for the following specific acts, namely:

For inefficiency in the performance of duty in failing, under circumstances in which the torpedo-boat T. A. M. Craven under his command was placed, to maintain the vigilant lookout and personal supervision over his vessel's movements necessary to avoid collision, thereby improperly hazarding said vessel and causing collision between said vessel and the torpedo-boat Dahlgren, with which he was cruising in company.

While the Court is of the opinion that the main responsibility for the collision rests upon Lieut. Brown, it thinks Lieut. Miller committed an error of judgment in not, in the circumstances, indicating in some way the intended change of course to Lieut. Brown, in whose company he had never before maneuvered torpedo boats. The Court in expressing this opinion regarding Lieut. Miller, has in mind the fact that it has not been customary in handling torpedo boats together to give previous notification of a change of course, unless they were quite close to each other—a fact which mitigates greatly the error of omission referred to on the part of Lieut. Miller.

For this error of judgment the Court is of the opinion that Lieut. Miller should be admonished or censured.

WASHINGTON, November 13, 1900.

Respectfully submitted, with recommendation that the findings of facts and the opinion of the Court of Inquiry, convened by the Department's order of the 29th day of October last, which investigated the collision between the torpedo boats Dahlgren and T. A. M. Craven, be approved.

In view, however, of the fact that few officers have had

experience in handling torpedo boats, and of the inadvisability of inculcating in the minds of the younger officers of the service, to whom the command of such boats must necessarily be entrusted, an excess of caution which might seriously interfere with their efficiency, it is believed that the trial by general court-martial of Lieut. Ford H. Brown, while properly recommended by the court, is unnecessary, and I have the honor to advise therefore, that said officer be, as in the case of Lieut. William G. Miller, censured.

Approved, as recommended, by the Judge Advocate General.

GERMANY'S MERCHANT MARINE.

Development of foreign trade exerts a powerful influence upon the shipping industries of a country. This is emphatically supported by the experience of European nations that have reached out for business in other lands. Germany, for instance, in the last 10 years has seen her shipbuilding plants develop into a large and important industry. Old wharves have been torn away and new and larger ones constructed in their place, yet the present capacity of all the wharves does not meet the demands of the German merchant marine, and many orders must still be placed in foreign countries. At present, twenty-two ships are being built in England for Hamburg alone. During the first half of the present year, the dock owners and shipbuilders of Stettin, Kiel, Flensburg and Bremen have increased their capital stock, on the whole, by \$1,378,000, and many new enterprises requiring large additional investments are being planned. In the neighborhood of Nordenham, on the Lower Wesel, large wharves are being built. A wharf is planned for Stralsund which will cost nearly \$1,000,000, and a German-Belgian syndicate will build a wharf in Antwerp under the auspices of the Bremen Vulcan Works. The German merchant marine now numbers 1,209 steamers, of 2,159,919 tons, according to a United States consular report upon the growth of this industry.

SHIPBUILDING RETURNS.

TREASURY DEPARTMENT,
OFFICE OF THE COMMISSIONER OF NAVIGATION,
November 30, 1900.

The Bureau of Navigation reports 75 vessels of 22,611 gross tons were built in the United States and officially numbered during the month of November, 1900, as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		ST'M.		SAIL.		STEAM.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	36	10,399	9	558	1	1,120	3	6,630	49	18,707
Pacific	4	971	2	75	..	..	..	..	6	1,046
Great Lakes .....	..	..	5	86	..	..	2	2,394	7	2,480
Western Rivers ..	7	118	6	260	..	..	..	..	13	378
Total	47	11,488	22	979	1	1,120	5	9,024	75	22,611

The largest steel steam vessel included in these figures is: Sonoma, 6,253 gross tons, built at Philadelphia, Oceanic S. S. Co., owners.

OCEAN COAL FLEET PLANNED.

The Pittsburg Coal Co., Pittsburg, Pa., is seriously considering the advisability of establishing a fleet of coal carriers to be employed in the foreign coal trade. Cargoes of the Pittsburg district coal product have been shipped to London, Brazil and other countries, and have given eminent satisfaction, so much so that the big combine is closely investigating the matter in all its bearings in order to be prepared to enter this field if conditions justify it. Mr. John D. Nicholson, a director of the company, while abroad recently, made a thorough study of the subject, and is inclined to think that the opportunities for his company building up a lucrative foreign trade are very flattering. Under present conditions the Pittsburg product could not be delivered in competition with West Virginia coal. Naturally the company receives many inquiries requesting rates for delivery at Mediterranean ports, and to points throughout the world, but the location of its coal plants handicaps the securing of any great quantity of foreign coal orders. Freight to tidewater are prohibitive, even if vessel freights were reasonable. Should the foreign coal trade reach large proportions, which seems almost assured at present, no doubt the Pittsburg concern will devise some methods to obtain a share of it.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Demurrage.—Where the owner of a vessel delayed his action for demurrage for six years, the claim was stale. *Jameson vs. Sweeney et al.*, 66 N. Y. Supp. 494.

Shipping—Bill of Lading—Custom.—Where a bill of lading of a vessel's cargo is silent as to the mode of delivery, it is to be according to the custom of the port or of trade between the parties. *Jameson vs. Sweeney et al.*, 66 N. Y. Supp. 494.

Bill of Lading.—Where a bill of lading vessel's cargo was silent as to who was to furnish discharging facilities, no action for demurrage for delay in securing proper dockage would lie against the consignors, since the owner took the risk of finding such facilities. *Jameson vs. Sweeney et al.*, 66 N. Y. Supp. 494.

Collision—Burden of Proof—Barges Improperly Anchored.—The rule is strict in behalf of a vessel injured in collision while at anchor, where properly anchored; but there is no presumption in favor of barges which were unnecessarily anchored where they swung into and obstructed the narrow channel of a river, and were left there at night with no one to attend to their lights. *The D. H. Miller*, 22 C. C. A. 597, 76 Fed. Rep. 877, distinguished. *Ross vs. Merchants & Miners Transp. Co.*, 104 Fed. Rep. (U. S.) 302.

Right to Abandon.—The general rule that a damage exceeding 50 per cent. justifies abandonment and recovery on a marine policy as for a constructive total loss does not apply to memorandum articles in respect of which the exception of particular average excludes a constructive total loss, though the rider extends the insurance to an actual total loss of a part. *Washburn & Moen Manufacturing Co. vs. Reliance Marine Insurance Co. (Limited)*, 21 Sup. Ct. Rep. 1.

Marine Insurance.—A rider on the margin of a policy of marine insurance stating: "Free of particular average, but liable for absolute total loss of a part if amounting to 5 per cent.," is in pari materia with a memorandum by which goods are "warranted by the assured free from average unless general," and qualifies the memorandum so that, instead of limiting the liability to an actual total loss, it permits recovery for an actual total loss of a part. *Washburn & Moen Manufacturing Co. vs. Reliance Marine Insurance Co. (Limited)*, 21 Sup. Ct. Rep. (U. S.) 1.

Seamen—Forfeiture of Wages by Desertion—Validity of contract.—A seaman cannot be bound for service on a ship during a particular voyage or for a definite period of time, so as to be chargeable with desertion, which will forfeit his wages, because he leaves the ship before the completion of the voyage or the expiration of such time, unless he signs shipping articles, as prescribed by Rev. St. § 4511, which definitely state the nature of the voyage. Articles which provide for a voyage to ports to be determined by the master, and for a return for discharge to a port of the United States, also to be determined by the master, do not comply with the statute, and are void. *The Mermaid*, 104 Fed. Rep. (U. S.) 301.

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 9TH DIST.,
CHICAGO, ILL., November 30, 1900.)
STURGEON BAY CANAL.—Notice is hereby given that the scow reported sunk in Sturgeon Bay Canal, Wisconsin, has been removed, and navigation through the canal is open.
F. M. SYMONDS, Commander, U. S. N.
Inspector 9th L. H. District.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 11TH DISTRICT,
DETROIT, MICH., December 1, 1900.)

Notice is hereby given that while the light-vessels, buoys and other aids to navigation will be maintained in the waters of Lake St. Clair, St. Clair River, Lake Huron, St. Marys River and Lake Superior, Michigan, as long as the condition of the ice permits, they cannot be depended upon after December 6th, 1900. The buoys in these waters will be replaced by winter markers.

This notice does not affect Light-House Board Notice to Mariners No. 137 of 1900, which states that the lights and fog-signals on Granite Island, Huron Island, Stannard Rock, Manitou, Gull Rock, Outer Island, Michigan Island, Raspberry Island, Devils Island, Sand Island, Isle Royale (Menagerie Island) and Passage Island cannot be depended upon after December 1st, 1900.

J. C. WILSON, Commander, U. S. N.,
Inspector 11th L. H. District.

VESSELS OPERATED BY ELECTRICITY.

Word is received from San Juan Bautista, State of Tabasco, says the "Nouveau Monde," of Paris, that the English Navigation Co. on the Rio Grijalva has inaugurated a daily service between the port of Frontera and Huimanguillo. These boats are operated by means of electricity, as well as is the Galo, built at San Juan Bautista, for a Frenchman, Mr. Rauld. The latter vessel has for the second time made the voyage from Tacoltapa. The freight is considerable, consisting principally of sugar, cacao, and coffee, and barrels of rum.

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CLEVELAND, O., DECEMBER 6, 1900.

AIDS TO NAVIGATION.

For aids to navigation on the Great Lakes the following appropriations are recommended: For the Milwaukee breakwater and harbor of refuge, which will be completed shortly and for the lighting of which no provision has yet been made, \$75,000; light and fog signal station establishment on the Fisherman's shoal in Lake Michigan, \$75,000; Point aux Barques light and fog signal station, Lake Michigan, which ought to be established in order to complete the system of coast lights that Lake Michigan requires by its increased commerce on the lakes, \$32,000; establishing a keeper's dwelling at Portage, Lake Mich., \$3,500; establishing keeper's dwelling at Kewaunee, Wis., \$7,500; construction of a keeper's dwelling at Calumet pier head, Lake Michigan, \$7,500; establishment of a fog signal at Holland pier head range, \$6,000; light and fog signal station on St. Martin's Island, entrance to Green Bay, \$14,000; light and fog signal station on Little Gull Island, St. Martin's passage, \$20,000; light ship at Peshtigo reef, Green Bay, \$15,000; completing a steam tender for the ninth light-house district, \$30,000; increase in cost of tender for engineer of ninth light-house district, \$50,000; light-house depot for ninth district, to be established at Milwaukee, and which will be kept in operation throughout the winter, \$50,000.

For the light-house district which includes all the ports on Lakes Erie, Ontario and the lower part of Detroit river, the recommendations are made: Light and fog signal on Chapman's shoal, St. Lawrence river, \$25,000; constructing range lights and keeper's dwellings at Oak Point, St. Lawrence river, \$10,000; Tibbertes point light station, to complete, and light-keeper's dwelling, \$3,500; establishing a small light at the mouth of Niagara river, \$2,000; completing a light and fog signal station at the entrance of Toledo harbor, \$62,500; construction of keeper's dwelling at Port Clinton, \$3,000; completing a dwelling for the keepers of Grassy Island range on Lake Michigan, \$5,000; completing dwelling for light-keeper at Grosse Isle, \$5,000; building light-keeper's dwelling at Grassy Isle, north channel, \$3,500; constructing and completing for service light-house tender for the tenth district, \$120,000.

For the eleventh light-house district, which extends from the River Rouge to the head of Lake Superior, and covers all American waters, the following amounts are recommended: Middle Island light and fog station at Crisp's Point, Lake Superior, \$18,000; constructing light station on Rock of Ages, Lake Superior, \$125,000; moving the light from Eage river to Sand Hills, \$25,000; establishing additional lights in the twenty-foot dredged channel at Isle aux Peches range, \$13,000; construction of a keeper's dwelling at Tawas light station, \$5,000; establishing a steel steam light vessel on Martin's reef at the head of Lake Huron, \$35,000;

and the construction of a steam tender for use in St. Mary's river, \$60,000.

For harbor and river improvements on the Great Lakes the following recommendations are made: For maintenance of harbor at Ashtabula, \$10,000; for maintenance of harbor at Cleveland, \$160,300; continuing improvement and for maintenance harbor at Conneaut, 210,000; continuing improvement and for maintenance harbor at Fairport, \$210,000; for maintenance harbor at Huron, \$50,000; for maintenance harbor at Port Clinton, \$9,000; continuing improvement and for maintenance harbor at Sandusky, \$125,000.

For continuing improvements Ashtabula harbor, \$2,000; continuing improvement Black river harbor, \$150,000; continuing improvement Cleveland harbor, \$100,000; continuing improvement Toledo harbor, \$250,000; continuing improvement St. Joseph (Mich.) harbor, \$38,000 continuing improvement and repairs to harbor of refuge at Sand Beach, Mich., \$50,000; continuing improvement harbor at Duluth, Minn., and Superior, Wis., \$33,000. For a survey of the Great Lakes, including all necessary expenses of correcting, extending, printing and issuing charts, and of investigating lake levels, with a view to their regulation, to be available until expended, \$200,000 is recommended, in accordance with the report of Gen. J. M. Wilson, Chief of Engineers, who says in approving the expenditure:

The greatly increased draft of the large vessels navigating the Great Lakes and their connecting channels demands a close re-examination of many localities which were originally surveyed with the requirements of a twelve-foot navigation in view. The investigation of the varying levels of the Great Lakes, due to artificial and natural agencies, should also be continued with vigor.

For contingent expenses of branch offices of the Hydrographic service, including the Cleveland office along with sixteen other offices in this country and a branch at Manila, \$35,000.

For the purchase of a site and the commencement of the new postoffice, court house and custom house of Cleveland, \$400,000.

For improvements to Marine Hospital buildings and new water supply at Cleveland \$12,000.

For the salaries and expenses of collectors and deputy collectors of internal revenue for Ohio, for the Cincinnati district \$45,000, for Toledo district \$18,500, for the Chillicothe district \$15,500, and for the Cleveland district \$25,500.

THE WORK OF THE WEATHER BUREAU.

It is estimated that the cost of maintaining the 150 stations of the United States Weather Bureau is about \$1,000,000 per year. Of this amount \$180,000 is expended in telegraphy, though the utmost economy is effected by the employment of a cipher code. As the value of weather forecasts lies in the immediate distribution of the knowledge obtained within two hours after the instruments are read in the morning, the information is sent to about 1,000 centers of distribution, thence by telephone, mail and railway service, to more than 73,000 addresses, the greater number being delivered early in the day and none later than 6 p. m. Observations are received in Washington within an hour of the time when they are taken, as arrangements are made with the telegraph officials whereby certain wires are held exclusively for weather reports during certain hours of the day. Besides the 1,000 telegraph distributing centers, the forecasts are telegraphed at government expense to about 1,800 additional places, where they are communicated to the public by means of signals, both of sound and sight, the latter consisting of flags and the former of steam whistles. In addition, about 8,000 emergency stations are supplied with news concerning prospective hurricanes, cold waves, frosts and local storms of local severity. It is reported that Germany proposes to copy the system prevailing in the United States.

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT,
 OFFICE OF THE LIGHT-HOUSE INSPECTOR,
 ELEVENTH DISTRICT, DETROIT, MICH., Dec. 5, 1900.

Notice is hereby given that the following-named light stations have been closed, and the lights and fog-signals discontinued until the opening of navigation, 1901: Lake Superior, Huron Island, Manitou Island, Outer Island, Sand Island, Michigan Island, Passage Island, Granite Island, Gull Rock, Devil's Island, Raspberry Island, Isle Royale, Stannard Rock, Lake Huron, Spectacle Reef.

By order of the Light-House Board:

J. C. WILSON, Commander, U. S. Navy.

Inspector 11th Light-House District.

WEATHER CONDITIONS.

WASHINGTON, D. C., December 4, 1900.

DEPTH OF SNOW.—December 3, the eastern portion of North Dakota and the northern portions of Minnesota, Wisconsin, and the upper Michigan Peninsula were covered to depths exceeding 3 inches, from 5 to 10 inches being reported from stations along the southern shore of Lake Superior. Northern New York, nearly all of the States of Vermont, New Hampshire and Maine were also covered, the northern portions of Vermont and New York having from 5 to 16 inches the greatest depths being shown over New York in the vicinity of Lake Champlain.

While the area covered at the corresponding date of 1899 was greater than at this date, the northern portions of Wisconsin and Minnesota and eastern North Dakota had little or no snow and the depths in northern New England were also less.

ICE IN RIVERS, HARBORS, ETC.—From 3 to 6 inches of ice is reported in the upper Missouri river from Pierre, S. Dak., to Williston, N. Dak. The Red river at Moorehead is frozen; ice 8 inches thick. At Duluth, Minn., harbor ice ranges from 2 to 7 inches, and St. Louis bay is covered, but the Duluth side of Superior bay is free from ice.

At the corresponding date of 1899 no ice was reported at Weather Bureau stations except at Williston, N. Dak., where it was 1 inch thick.

JAMES BERRY, Chief of Climate and Crop Division.

AUTOMATIC PLUGS FOR BURST TUBES IN WATER-TUBE BOILERS.

On the head of a slender stalk, from two to three times as long as the bore of the tubes in a water-tube boiler with nearly horizontal tubes, is a hemispherical plug, about half as large again as the bore. One of these plugs is provided at each end of every tube. When the stalk is inserted into the tube, the plug hangs down outside just clear of the orifice; a horizontal rod prevents the plugs from falling out of a whole row of tubes. If a tube bursts, the rush of water into it carries the plug along with it, and effectually blocks the orifice. The body of the plug is of iron, steel or gun metal, solid with the stalk, and is coated with a soft layer of lead to form a water-tight joint when pressed against the orifice of the tube by the boiler pressure. In sectional boilers, where the tubes are arranged in separate series, it may suffice to put a plug at each end of every series only, instead of at every tube. The plan has been adopted with success by its author, Mr. Ravier, engineer in the French navy, in a torpedo boat with Du Temple boiler, in which the bursting of a tube produced no inconvenience at the moment of its occurrence; the boat was able to continue its voyage, and to put to sea again next day without repair, the burst tube being effectually plugged at both ends by these self-acting bungs. They have now been in use eighteen months in various torpedo boats and tugs, with satisfactory results. The weight and shape of the plugs are so proportioned as to prevent any risk of their accidentally blocking the tube ends in the regular working of the boiler. The arrangement is suitably modified for different kinds of boilers, such as the Oriolle, the Belleville, and boilers with vertical water tubes.—Br. Inst. C. E., Foreign Abstracts.

CALL FOR A NATIONAL MARITIME CONGRESS.

The Governor of Georgia has issued the following call for a National Maritime Congress to assemble at Brunswick, Ga., on the 30th of January, 1901. The number of delegates are limited to two from each Chamber of Commerce and one from each shipbuilding firm.

STATE OF GEORGIA, EXECUTIVE DEPARTMENT, ATLANTA.

Impressed with the importance of creating an interest in the maritime business of the United States and a sentiment that may tend to restore its former prestige as a great carrying power, I have deemed it proper to issue a call for a Maritime Congress to assemble at Brunswick, Georgia, on the 30th day of January, 1901.

In the interest, therefore, of patriotism and the commercial welfare of the citizens of the United States, I trust the object of this call will receive that consideration from those who feel an interest in the promotion of the maritime greatness of our country, to which its importance entitles it.

For information as to the work proposed by this Congress parties interested may address Hon. C. D. Ogg, Secretary of the Board of Trade, Brunswick, Georgia.

Given under my hand and seal of the Executive Department at the capitol in the city of Atlanta this the in the year of our Lord.

(Signed) A. D. CHANDLER, Governor.

TREASURY DECISIONS.

VISITING LOCAL BOARDS BY SUPERVISING INSPECTORS.

TREASURY DEPARTMENT, November 16, 1900.
To Supervising Inspectors of Steamboats:

Supervising inspectors are hereby instructed that they must, so far as possible, transact the necessary official business between themselves and their local boards of inspectors by written correspondence through the mails, except in cases where their personal presence is absolutely necessary. In such cases, however, supervising inspectors must state in their personal expense accounts, when charging mileage or actual expenses connected with such visits, the specific reasons making such visits necessary.

It is suggested, however, that supervising inspectors should formally visit, semi-annually, the local boards of inspectors located at a distance from the home port of the supervising inspector, for the purpose of complying with the requirements of section 4406, Revised Statutes, namely, of conferring with and examining into the doings of such local boards, and to instruct them in the proper performance of their duties, and to visit any licensed vessels accessible at the home ports of such boards, to "examine into their condition, for the purpose of ascertaining whether the provisions of the steamboat laws 'have been observed and complied with, both by the board of inspectors and the masters and owners' of such vessels."

Supervising inspectors, who for any reason are going to be absent from their home ports for more than forty-eight hours at any time, must advise the Supervising Inspector-General of the fact, and of their address during such absence, so that that officer may have prompt telegraphic communication with such supervising inspector if necessary.

L. J. GAGE, Secretary.

LIGHTS AND BALLS ON VESSELS.

Red lights should be carried on both steam and sail vessels not under command at night, and balls or shapes in the daytime.

TREASURY DEPARTMENT, BUREAU OF NAVIGATION,
WASHINGTON, D. C., November 16, 1900.

Sir: This office is in receipt of your letter, dated the 12th instant, criticising the provisions of the act of Congress relative to lights carried by vessels under the rules to prevent collisions at sea. You state that articles 4 and 11, relative to the lights to be exhibited on vessels aground or disabled in a fairway, are "rather conflicting and indefinite as regards the red lights for sailing vessels;" that article 4, requiring a steam vessel to carry two red lights, does not define what a sailing vessel has to do, and that you "want to know the requirements of the law on the points mentioned," and also, "about the black balls for sailing vessels."

You do not seem to have read the law with care. The article states plainly that a "vessel" shall carry two red lights, etc. The word "vessel" includes a sailing or a steam vessel, and the article embraces vessels of both kinds. It may be that you have become confused by the provision in the article (a) which states that the two red lights are to be carried by a steam vessel in lieu of a white light. This limitation does not apply to the sailing vessels covered by the regulation, for the reason that they are not required to exhibit a white light when under way. The limitation as regards steam vessels does not in any way affect the general requirement of the article that the two red lights shall be carried both by sailing and by steam vessels.

The two black balls or shapes you mention are to be exhibited in the daytime under the circumstances set forth in the article, which requires that they shall be 2 feet in diameter. The law does not describe them further, but it is evident that they should be such as to fulfill the intention of Congress in requiring their exhibition, and to satisfy any court before which a case involving their use may be tried, that they were so carried, and were of such a character, as to comply with the requirements of the statute.

Respectfully,

E. T. CHAMBERLAIN, Commissioner.

Mr. A. T. STUBBS, Bucksport, Me.

EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report the condition of the eastern freight market as follows:

The marked reduction in the volume of charters reported this week, as compared with the preceding week's business, is largely referable in part of the gradual absorption of prompt tonnage and partly to the momentary absence of any pressing demand for boats available after the turn of the year only. Thus, while grain steamers for early December loading can still find takers at from 38 7/8 d to 38 9 d for picked ports, the best obtainable offer for January steamers is 38 3/4 d; Cork f. o. tonnage continues neglected. A slight revival of enquiry for tonnage from Southern cotton ports is noticeable although the demand, in the uncertainty overhanging further delivery of cotton on a fairly liberal scale, is by no means general. Freight from the Gulf are fairly well maintained for December steamers, transactions for later months being subject to concessions on part of owners. Timber charterers are again coming into the market in consequence of the easier tone for these freights. Time boat are in limited demand and this business, in order to broaden will require further concessions from owners. The enquiry for coal tonnage is very light and unequal to the task of favorably influencing the market by its weight.

Our market for sail tonnage remains firm and, on the whole unchanged. If anything, rates may be called a trifle steadier.

FLOTSAM JETSAM AND LAGAN.

There are on the stocks and under way at the Cramp shipyard, over a dozen ships whose aggregate value approaches \$25,000,000.

The schooner Vermont, which was scuttled at Garden Bay during a recent gale, has been pumped out and is ready to sail again.

The New York Ship Building Co., has contracts for the building of two steel steamers, besides the two for the American-Hawaiian Steamship Co.

The steamer W. F. Sauber has taken out the last ore cargo for the present season from Ashland. The total of shipments is 2,629,946 tons, or about 73,501 tons less than last season.

The Goodrich Line, Chicago, has made an official announcement that if the Barry line does not withdraw its service from Chicago to the east shore, the cut rate of 10 per 100 pounds will be kept standing during the next season.

The Black Diamond says that there is a good demand for soft coal, which is expected to continue through the season, because there has been a wonderful revival in business. Shippers find it difficult to get coal moved promptly and dislike the new steel cars. Anthracite coal experiences the same strong demand which has characterized it for some weeks. According to last week's shipments of anthracite by lake, the smaller ports are evidently in some stress for coal. Shipments of coal by lake from Buffalo aggregated 56,125 tons, distributed as follows: Milwaukee, 20,550 tons; Duluth Superior, 7,850 tons; Sheboygan, 7,750 tons; Chicago, 7,400; Manitowoc, 4,300 tons; Gladstone, 2,700 tons; Racine, 2,450 tons; Bay City, 1,225 tons; Toledo, 1,200 tons, and Garden Island, 700 tons of bituminous. There will be no more regular freight rates, though it is expected that further coal will be shipped to Lake Superior and Michigan.

Work is to be commenced at once on an immense dry dock at Hunter's Point, in the harbor at San Francisco. This dock is to be 750 ft. long, 122 ft. wide at the coping and 74 ft at the bottom, will have a depth at the entrance of 32 1/2 ft. below the coping and 28 ft. below water level and its ultimate cost will be \$550,000. It is to be excavated in solid rock so that only a thin lining of concrete finishing will be necessary. Between the concrete lining and the rock surface there is to be a water-proof coating of asphalt. The entrance of the dock is to be closed by a steel caisson which will be 104 ft. 8 ins. long with a moulded breadth of 22 ft. and a depth of 33 ft. 9 ins. from the bottom of the keel to the under side of the upper deck. The caisson itself will be reversible and divided into six watertight compartments. The dock will be filled through the caisson by means of thirteen 30 in. gate valves and will be emptied by a 3,000 gallon centrifugal pump.

John P. Holland is fitting a submarine vessel at the shipyards of Lewis Nixon in which he intends to cross the Atlantic. Mr. Holland proposes to sail to Bermuda, then to Fayal in the Azores, then to Lisbon, Portugal, a trip of 3,496 miles. The voyage is expected to take 16 days, and is planned for February, though no date is set. The boat is known as "No. 7." Her speed will approximate nine and one-half knots for the voyage, which will be mainly on the surface. Occasionally she will go under, and remain for thirty or forty miles, at a depth varying from 30 to 60 feet. Mr. Holland has the utmost confidence in the ability of No. 7 to make the trip in safety. He himself will be in command. Including the inventor, there will be eight men aboard, and an extra crew will be carried in a tender that is to convoy No. 7, to protect the men against actual hardship. This tender will be a small tramp steamer. She will keep her consort constantly in sight if possible.

In a newspaper report, a director of the American Steel and Wire Co. is reported to have said, after the board meeting, in New York on Tuesday of this week: "The company's tonnage for November will be the largest in its history. All records were broken by October, which, considering the period, was phenomenal. The board was told that, while foreign trade had been diminished, owing to high ocean freights, yet the domestic business was better than had been even hoped for. Now that the company is relieved of its burdensome contracts for material, none will be renewed with the Federal Steel or other companies, except at advantageous terms for us. We have an annual tonnage of 1,500,000 tons of ore from the mines to Cleveland, whence it is shipped to Pittsburgh, and, as it was, the transportation companies had us at a disadvantage. Last year they jumped the rates. The outlay to purchase a dozen boats was over \$5,000,000. Many of them are over 500 feet long."

The annual convention of the International Seamen's Union, held at Boston, adopted a protest against the towing practice as dangerous, and declaring that only one cargo-carrying vessel should be towed at any one time, unless the vessel so towed could be managed independently of the "tow" either under sail or steam, favoring a federation or amalgamation of longshoremen and sailors; requesting the board of inspectors of hulls and boilers to so amend their rules as to provide for a reasonable time for service on sailing vessels, and an examination into the real seamanship of all applicants for licenses as officers. The legislative committee was instructed to obtain from Congress such amendments to the present merchant marine laws as will provide for the proper cooking and serving of food. The following officers were elected: President, William Pange, of Chicago; vice-

president, William Anderson, of San Francisco; secretary-treasurer, William H. Frazier, of Boston; legislative committee, Andrew J. Furnesth, of San Francisco, William McArthur, of San Francisco, and William H. Frazier, of Boston.

The Pittsburg Coal Co., of Pittsburg, has under advisement a plan for the establishment of a fleet of coal carriers to ply the Atlantic, and for the building of seaboard and foreign docks, so as to enter foreign markets on a larger scale with its product. Despite the fact that much of the product of this company has been shipped abroad during the past summer, the company has never assumed the responsibility of shipment beyond tide-water, all quotations to foreign interests having been made on that basis. The uncertainty connected with securing bottoms for the shipment of bituminous coal has prevented the company from chartering vessels. Some months ago the advisability of establishing such a fleet was looked into by John D. Nicholson, a director of the company, and he returned enthusiastic over the feasibility of the scheme. At the present time Pittsburg coal is delivered in London at something less than \$6.50 a ton, which is almost \$1 more than the price of British coal. Controlling its own fleet, however, the company can reduce considerably the cost of transportation and the Pittsburg product will be better able to compete with British coal.

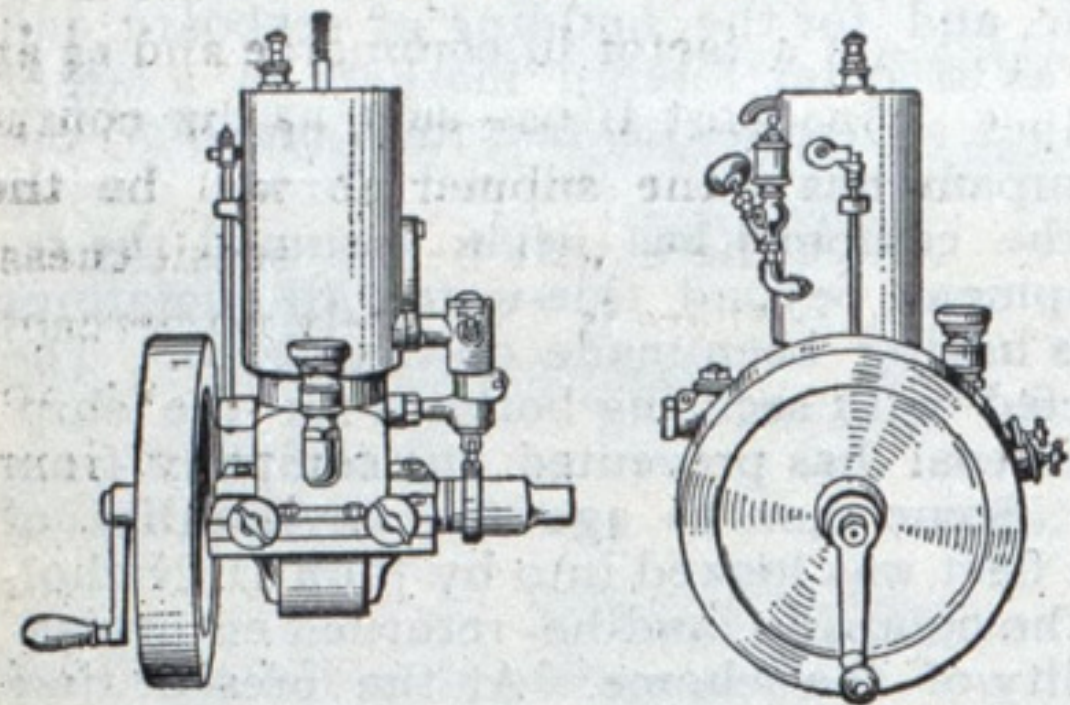
At the works of the Eastern Shipbuilding Co., Groton, Conn., work was begun last week on the laying of the keels of two steel steamships to be built for the trade between the Pacific Coast and Oriental ports in connection with the Great Northern railway. The new steamers will be 20,000 tons register and 33,000 tons displacement, or just 10,000 tons more displacement than the greyhound Deutschland. They will each be 630 feet in length, 73 feet beam and 56 feet deep, and, when completed, they will cost fully \$5,000,000. They will have each five continuous decks, extending the whole length of the ship, with three additional partial decks amidships. The carrying capacity of these ships is tremendous, and the holds are such that 28,000 tons of coal can be carried. The deadweight carrying capacity, at normal draft, is stated as 20,000 tons. Passengers will also be carried, and excellent accommodations are provided for nearly 1,000 passengers in three classes. The vessel will have twin screws, triple-expansion engines and water tube boilers. Although designed to be primarily cargo-carriers they will have a speed of 14 knots an hour and carry over 4,000 tons of coal in bunkers. They are designed to carry cattle, chilled or frozen meats in refrigerating chambers, fruit or any kind of cargo that may appear for transportation.

Discussing the fact that his company has lately given contracts for two large steamships to the Maryland Steel Co., Sparrow's Point, Md., President B. N. Baker, of the Atlantic Transport Line, said: "This is only a beginning of what we propose to do. Heretofore the ships of this line have been built in England and at Belfast, Ireland, where Harland & Wolff's plant is located. I am an American and would prefer to have ships built on this side, even if the cost of construction is greater. The Republican platform promises that the Republican party will in its legislation pass measures to help American merchant marine and American shipbuilding. It is now up to Congress to pass laws which will encourage the building of ships in this country, and I feel Congress will not fail to do its duty in this matter. If there is a proper legislation our merchant marine will grow to enormous proportions and shipbuilding in the United States will become the great industry it ought to be. What we want is to have shipyards established that will be fully equal to the great shipyards in Great Britain and elsewhere. True, we have not many first-class ship riveters here, but they can be easily secured and other mechanics can soon be shown how to do the work as well as those who do it at any of the great shipyards of the world. I have no doubt many men would come here from the region of the lakes and a number of skilled men from abroad."

The season for ore shipments from the Northwest to the Pennsylvania, Ohio and Illinois furnaces is about at an end. The blizzards during the past ten days which froze the ore in the pockets at the docks was an early warning to shippers that operations should cease. The Vermillion range mines substantially finished their shipments some days ago; the Missabe mines, shipping to Duluth, are, many of them, still in operation. The Ashland and Marquette regions have about quit unloading from the mines on account of the ore freezing in the cars as well as in the docks. There are still efforts to continue shipments to close up contracts, but estimates can not be made showing the enormous ore product from the Northwest this season. The total shipments will aggregate nearly 18,750,000 tons. This is half a million tons in excess of the largest shipment heretofore, which was that of last season. The product for this year is nearly equal to the total from the discovery of ore in the Northwest until and including the year 1883. Of the above shipments of 18,750,000 tons about 5,000,000 tons were shipped to the Carnegie and Oliver interests at Pittsburgh. It is stated by the Cleveland shippers that all the ore brought down this season has actually been sold to consuming furnaces, and that for the first time in many years there has been no unsold ore brought down and placed in storage on Lake Erie docks. The lake steamer carriers have reaped a good harvest this year, the price for carrying ore this season being \$1.25 per ton. Last year the price paid them was 60 cents per ton, making a difference in their income this year of about \$12,000,000.

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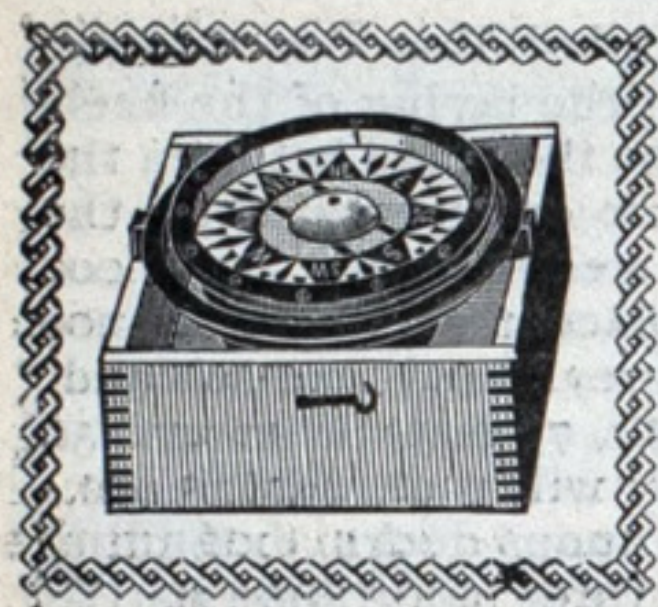
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OUR NEW BATTLESHIPS.

The designs for the five new steel battleships for the U. S. Navy now approaching completion by the Bureau of Construction and Repair, provide for vessels more powerful than those of any other Navy in the world. These vessels will be known as the Pennsylvania, New Jersey, Georgia, Virginia and Rhode Island.

The provisions of the Acts of 1899 and 1900 for the five vessels have been covered by designs for three sheathed and coppered battleships with the "quadrilateral arrangement" of 8-inch turrets. The general dimensions and chief characteristics of the sheathed and coppered vessels are: Length on load water line, 435 feet. Breadth, extreme, at load water line, 76 feet 10 inches. Trial displacement, about 15,000 tons. Mean draft at trial displacement, about 24 feet. Greatest draft, full load, about 26 feet. The general dimensions of the unsheathed vessels are: Length on load water line, 435 feet. Breadth, extreme, at load water line, 76 feet 2½ inches. Trial displacement, about 14,600 tons. Mean draft at trial displacement, about 24 feet. Greatest draft, full load, about 26 feet. These battleships will have a speed of at least 19 knots.

The vessels will be propelled by twin screws driven by two 4-cylinder, triple-expansion engines of about 19,000 indicated horse-power, having a stroke of 4 feet, running, under conditions of maximum speed, at about 120 revolutions per minute. The steam necessary to this power will be supplied at a pressure of 250 pounds per square inch, by 24 Babcock & Wilcox straight water-tube boilers, placed 4 in each of six independent water-tight compartments.

Each ship will carry four 12-inch guns, mounted in pairs in Hichborn balanced turrets, having an arc of train of 270 degrees, one forward and one aft in each vessel. Of the eight 8-inch guns, which will be carried on each of the three sheathed vessels, four will be mounted in turrets of the Hichborn type, superposed upon the 12-inch turrets above mentioned, and four in two turrets amidships, the amidships turrets having an arc of train of 180 degrees; and in the two unsheathed vessels, all eight 8-inch guns, will be mounted in four independent turrets, each having an arc of train of 145 degrees, placed two on each side at the ends of the superstructure, thus forming a quadrilateral. In each vessel there will be a broadside of twelve 6-inch rapid fire guns, mounted six on each side, on the main deck, each with an arc of train of 110 degrees, and each ship will have twelve 14-pounders and twelve 3-pounders, mounted in commanding positions and having very large arcs of fire. In the two lower tops there will be four automatic 1-pounders and in the upper tops four single shot 1-pounders.

The vessels are fitted with submarine torpedo tubes. Two of these are located in one compartment, one on each side, fitted for the discharge of the large 18-inch Whitehead torpedo.

In the magazines provision is being made for their artificial cooling. Provision will be made in the magazines for the storage of at least 60 rounds for each of the 12-inch guns, representing a weight of about 144 tons; 125 rounds for each of the 8-inch guns, weighing about 180 tons; 200 rounds for each of the 6-inch guns, the weight of which will be about 190 tons; 500 rounds for each of the 3-pounder and 1-pound guns, and an almost inexhaustible supply of ammunition for the smaller guns.

Each vessel is to be provided with a complete water-line belt of armor, eight feet in width amidships, eleven inches thick at the top and eight inches at the bottom, tapering to a uniform thickness of four inches at the ends of the vessel. They will also have an armored belt extending over 245 feet of their length, of a uniform thickness of six inches, rising from the top of the main belt to the upper or main deck, and joined at its after end to the barrette of the 12-inch turret by a 6-inch armored bulkhead, and having at its forward end an inclined armored bulkhead from side to side six inches thick, thus forming a citadel or redoubt within which the 6-inch guns will be mounted. The barbettes for the turrets of the 12-inch guns are to be ten inches in thickness, for that portion outside of the redoubt or citadel, reduced to six inches thickness within. The turrets themselves will be protected by armor 10-inches in thickness, the port plates however, being eleven inches. The 8-inch turrets will, in all cases, be protected by six inches of armor, with six and a half inch port plates, and their barbettes will be protected by similar armor. The conning tower and its shield will be nine inches in thickness, and the armored tubes will be protected by six inches of armor and will be of sufficient size not only to receive all the voice-pipes, wiring, etc., but to also permit of their being used as a passage-way, if necessary.

WORK ON NAVAL VESSELS.

Chief Constructor Hichborn's monthly statement of the condition of work on warships under construction shows that, of the battleships, the Alabama, now in commission, leads the list with 99 per cent. of work done. The Wisconsin comes next with 97.5 per cent. and the Illinois third with 86 per cent. The Maine is 37 per cent. completed, the Ohio 33 per cent. and the Missouri 17 per cent.

Of the six protected cruisers of the Denver class, the Denver leads with 31 per cent. of work done. The monitor, formerly called the Connecticut, now unnamed, is nearer completion than any of her three sister ships, with 71 per cent. of work done.

The torpedo boat destroyers Lawrence and MacDonough are 98 and 97 per cent. completed, respectively.

Other torpedo boat destroyers the Goldsborough, the Stringham, the Bailey, the Barney, and the Stockton are all within 3 per cent. of completion. No progress has been made on the submarine torpedo boat Plunger, which remains at 85 per cent.

"THOSE WHO SEEK TO DIVERT THE FLAG FROM ITS SACRED USES SHOULD BE RESTRAINED BY PUBLIC LAW."—William McKinley, President of the United States.

"* * * I cordially hope that there will be national flag legislation of the kind we have had in New York."—Col. Theodore Roosevelt, Vice President-elect of the United States.

"I am strongly opposed to all advertising uses and other perversions of our flag, and I hope the efforts of your association will be successful to prevent every desecration and improper use of our national emblem."—Grover Cleveland, former President of the United States.

"As you already have a sympathetic expression from me in behalf of the effort to prevent the misuse of the American flag, I can only add that any movement that tends to promote love and reverence for the flag has my ardent sympathy."—Gen. Benjamin Harrison, former President of the United States.

"I cordially sympathize with the good work in which you are engaged, of protecting the national flag from desecration. It is a symbol which ought to be sacred to every citizen of the Republic, and should never be sullied by unworthy uses."—Col. John Hay, Secretary of State.

"I am always heartily in sympathy with any movement which has for its object the prevention of desecration of the national emblem of the United States."—Elihu Root, Secretary of War.

"* * * Flag legislation should be national rather than the enactment by State legislatures in order to have the greatest possible effect upon public sentiment. I wish your flag association success."—Sanford B. Dole, President of Hawaii.

"We do not hesitate to disparage ourselves and our symbol in the eyes of other civilized people. Other nations are scrupulous in respecting the emblems of their sovereignty. A suitable flag law by the national Congress ought not to take a week for final action."—Brig. Gen. William Ludlow, U. S. A., former Military Governor of Havana, Cuba, now President of the Board of the United States War College.

"Whatever lowers the flag takes from it the respect of the multitude, lowers the country, and takes from the country the respect of its citizens."—His Grace, Archbishop John Ireland.

HASSAN PASHA, Ottoman Minister of Marine, and General Williams, representing the Cramp Ship Building Co., of Philadelphia, have signed a contract for the construction of a cruiser for the Ottoman navy. The price to be paid is £350,000, which includes £23,000 as indemnity to the United States for losses sustained by Americans during the Armenian massacres.

THE CELESTIAL BODIES FOR DECEMBER.

Astronomical data for December, 1900, furnished by the Washburn observatory:

The evening sky is left now without bright planets, although Saturn may be seen for some evenings more very low in the southwest soon after the sun has set. The sun in its eastward course overtakes and passes Jupiter on December 14th and Saturn on December 29th; so that these planets will soon be visible in the morning. During the present month the red planet Mars will be seen in the southeastern and southern sky in the early morning hours, while Venus continues to be the brilliant morning star. Mercury also is a morning star, reaching greatest elongation west December 7th, but is too far south to be readily found.

The times of sunrise and sunset at Milwaukee for the month are as follows:

	SUNRISE.	SUNSET.
Dec. 1.....	7:04.....	4:18
Dec. 11.....	7:13.....	4:16
Dec. 21.....	7:20.....	4:19
Dec. 31.....	7:24.....	4:26

The times of the moon's phases are:

Full moon.....	Dec. 6, 4:38 a. m.
Third quarter.....	Dec. 13, 4:42 p. m.
New Moon.....	Dec. 21, 6:11 p. m.
First quarter.....	Dec. 28, 7:48 a. m.

The principal fixed stars visible in the evening hours during the month are:

To the west Vega and Altair. To the east Aldebaran, the Pleiades, the bright stars of the constellation Orion, Sirius, Procyon, Capella, and Castor and Pollux.

NEW STEAMSHIP LINES.

At the request of several merchants located in the City of Mexico who import Italian products, a Spanish company has decided to establish a line of steamers between Italy and Mexico. This service was to have been inaugurated August 7 last, by a trip from Genoa to Progreso, with stops at Veracruz and Tampico. It is said that a German company also contemplates establishing a steamship line between Italy, Spain, and Mexico. The creation of these lines proves what statistics have already shown, that the traffic between Mexico and Italy is constantly increasing. The exportation of henequen and large quantities of textiles to Italy has already begun.

The Department of Communications and Public Works has made a contract with Messrs. E. Escalante & Son, of Merida, State of Yucatan, by which the latter agree to establish a line of steamers between Progreso and New York City. According to the terms of the contract trips must be made at least once a month between the ports mentioned. The duration of the contract is for two years, but may be prolonged for further periods of two years by the mutual consent of the contracting parties.

ADDRESS WANTED.—Mr. S. S. Mattison, of 540 Rex Place, Camden, N. J., wishes to locate his brother, Thos. R. Mattison, last heard of in Detroit some two years ago, at which time he was working on some steamer plying on the lakes. Any information will be thankfully received.

NOTES.

To the end of September last no less than 562,997 tons of foreign pig iron had this year been imported into Germany, as compared with only 438,712 tons in the corresponding period of last year. On the other hand, the exports of German pig iron declined from 137,393 tons in the first nine months of 1899 to only 92,434 tons in the nine months ending with September last.

In Austria, reports Consul Hughes, where everything in the shape of fuel is being carefully investigated, sawdust is impregnated with a mixture of tarry substances and heated to the proper temperature, it is then passed over a plate of iron heated by steam, from which a screw conveyor takes it to a press, where it is compressed into briquettes of the required size. The press turns out nineteen per minute, weighing two-fifths of a pound each, and measuring 6 by 2½ by 1½ inches. The calorific power is about the same as that of lignite, with but 4 per cent. of ash. One factory produced last year over 7,000,000 briquettes, costing about 16 cents per thousand, and selling at from 95 cents to \$1.

The Navy Department is to advertise within a few weeks for bids for building two of the new shops for the department for construction and repair at the Charlestown navy yard. The two which are to be built first are the largest and will be known as the ship fitters' shop and the metal workers' shop. The shops are to be of equal size and constructed of the same materials. They are to measure 110x450 feet on the ground, and will be two stories high. Each will be of the latest fireproof construction; brick with granite trimmings over a steel frame. Both shops are to have wing extensions to give additional room. The late Congress appropriated \$200,000 for the erection of each of the shops. Included in this price is the cost of the interior fittings, plumbing, heating apparatus and drainage system.

Writing from Frankfort, under date of November 3, 1900, Vice-Consul-General Hanauer says: "According to German press reports, negotiations are pending between the Russian railroads and the Prussian governmental railroads to carry into execution a project of the Russian Minister of Finance, which aims to obtain the Russian petroleum lower transportation charges on Prussian railroads. The Russian roads offer to carry the oil at the ridiculously low rate of one one-hundredth of a kopeck (half a cent) per pood (36¼ pounds) per verst, (two-thirds of a mile). Germany is willing to carry on her roads Russian oil at one-sixteenth of a kopeck per pood per verst, provided Russian will reciprocate by giving low railroad rates for German iron. This has been acceded to, and the freight schedules are now being made out on this basis. The differential rates accorded by Russia comprise ironware and manufactured iron, as well as pig iron. Our American exporters would do well to examine closely into this matter, which will discriminate against our exports of rails, locomotives, machinery, etc., to Russia.

JOHN P. HOLLAND, the inventor of the submarine boat, bearing his name, which was recently accepted after severe tests by the United States government, writes with glowing pen in the December number of the North American

Review of "The Submarine Boat and its Future." As an engine of war, this style of boat makes it impossible for the present for a hostile fleet to approach the shore of any country which possesses it in sufficient numbers, although it is possible that tacticians may succeed in finding a means of meeting the menace of this veritable "sea-devil." Mr. Holland insists, however, that it is in connection with the pursuits of peace that the submarine boat presents the most fascinating possibilities—as a factor in commerce and as an instrument of science. On short trips—such as the course across the English channel—the submarine will be the favorite means of travel: "There will be no seasickness, because in a submerged boat there is absolutely no perceptible motion. There will be no smells to create nausea, for the boats will be propelled by electric power taken from storage batteries, which will be charged at either end. The offensive odor that causes so much discomfort in surface boats is due to the heated oil on the bearings, and to the escaping steam. There will be no steam on these submerged channel boats, and the little machinery necessary to drive them will be confined within an air-tight chamber. There will be no collisions, because the boats coming and the boats going will travel at different depths—say, one at twenty, the other at forty feet. The water overhead may be crowded with large and small craft, but the submarine will have a free, unobstructed course. She will be kept absolutely true to this course by means of cables running from shore to shore. On these cables will run an automatic steering gear attached to the submarine. Storms and fogs will have no existence for the traveler, for weather cannot penetrate below the surface of the water. There, everything is smooth and clear. The appointments on such a vessel will be finer than anything that can be furnished on the surface. There will be no dampness, no stickiness. The passenger will enter a handsomely fitted cabin at Dover. Electric lights will make it cosy and bright. Neither the cold of winter nor the extreme heat of summer will be felt. The temperature under water is about the same all the year round."

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo.....	3,837,000	728,000	314,000	100,000	1,433,000
"afloat.....	464,000				
Chicago.....	11,620,000	1,872,000	3,448,000	599,000	75,000
Detroit.....	428,000	76,000	62,000	61,000	29,000
Duluth.....	5,405,000	189,000	607,000	233,000	343,000
Fort William, Ont..	1,285,000				
Milwaukee.....	785,000	81,000	252,000	4,000	32,000
Port Arthur, Ont....	110,000				
Toledo.....	1,087,000	624,000	939,000	24,000	
Toronto.....	71,000		2,000		196,000
On Canals.....	125,000	34,000	149,000		66,000
On Lakes.....	2,861,000	2,449,000	216,000	30,000	600,000
On Miss. River.....	24,000	156,000			
Grand Total.....	62,197,000	9,442,000	11,319,000	1,325,000	3,418,000
Corresponding Date, 1899.....	53,778,000	11,712,000	6,311,000	1,363,000	3,775,000
Increase.....		738,000			
Decrease.....	82,000		45,000	1,000	141,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

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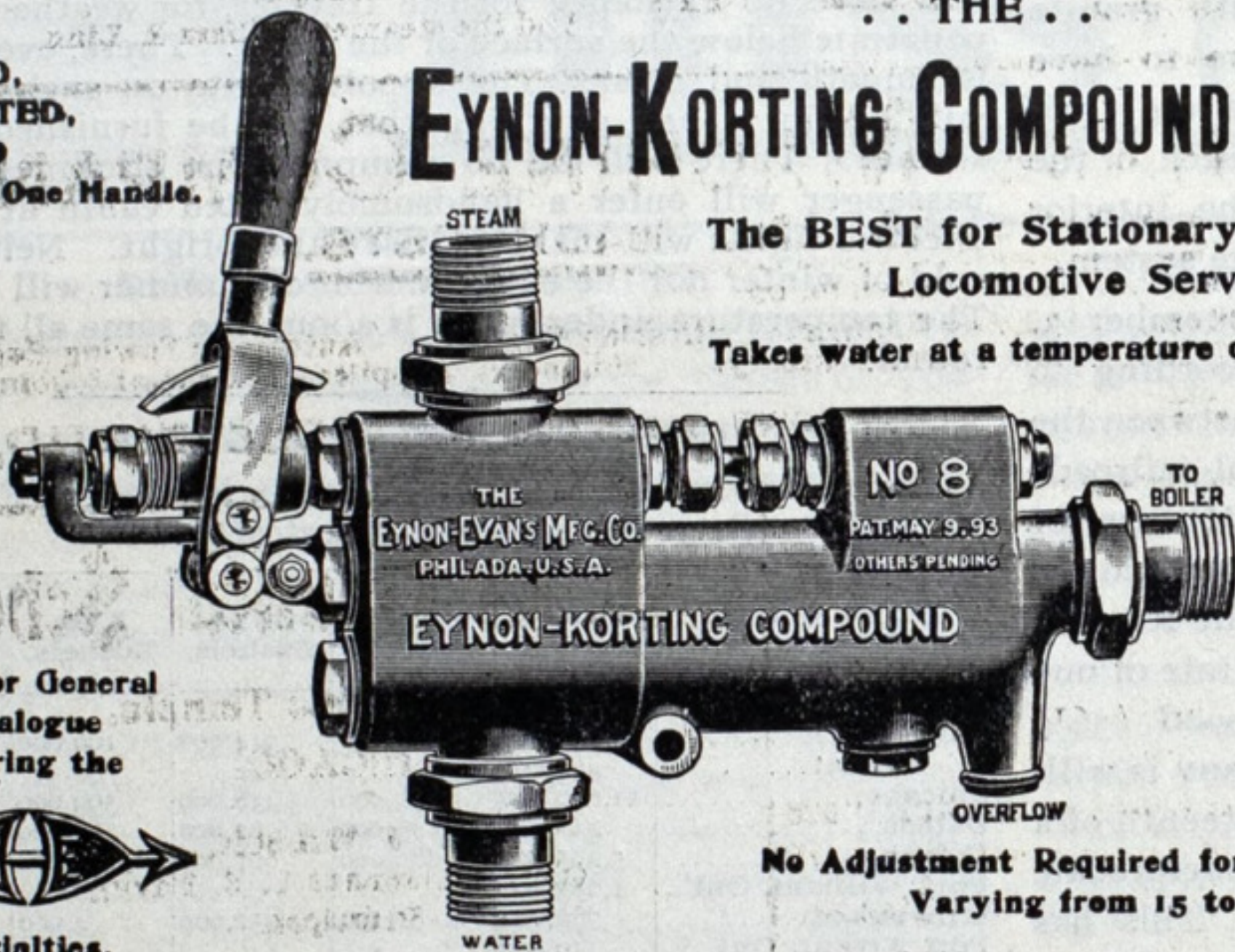
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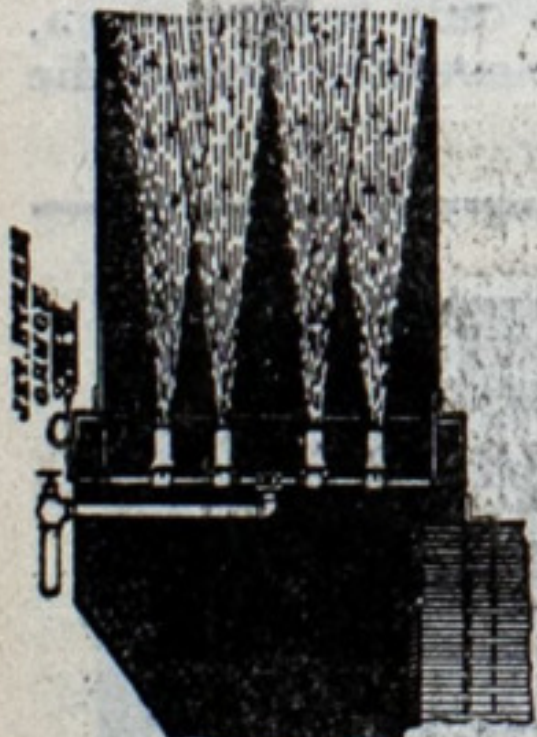
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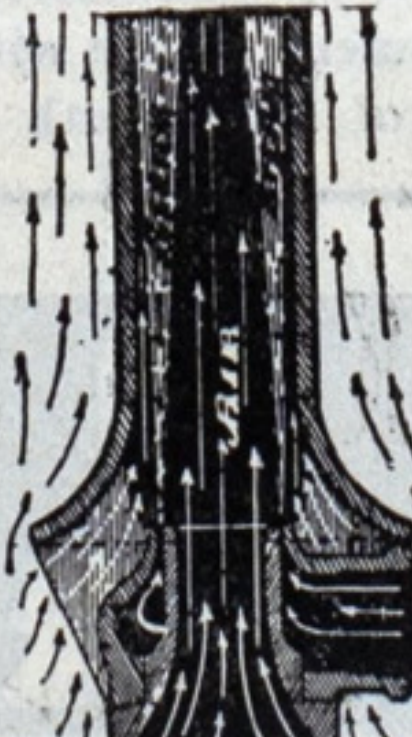
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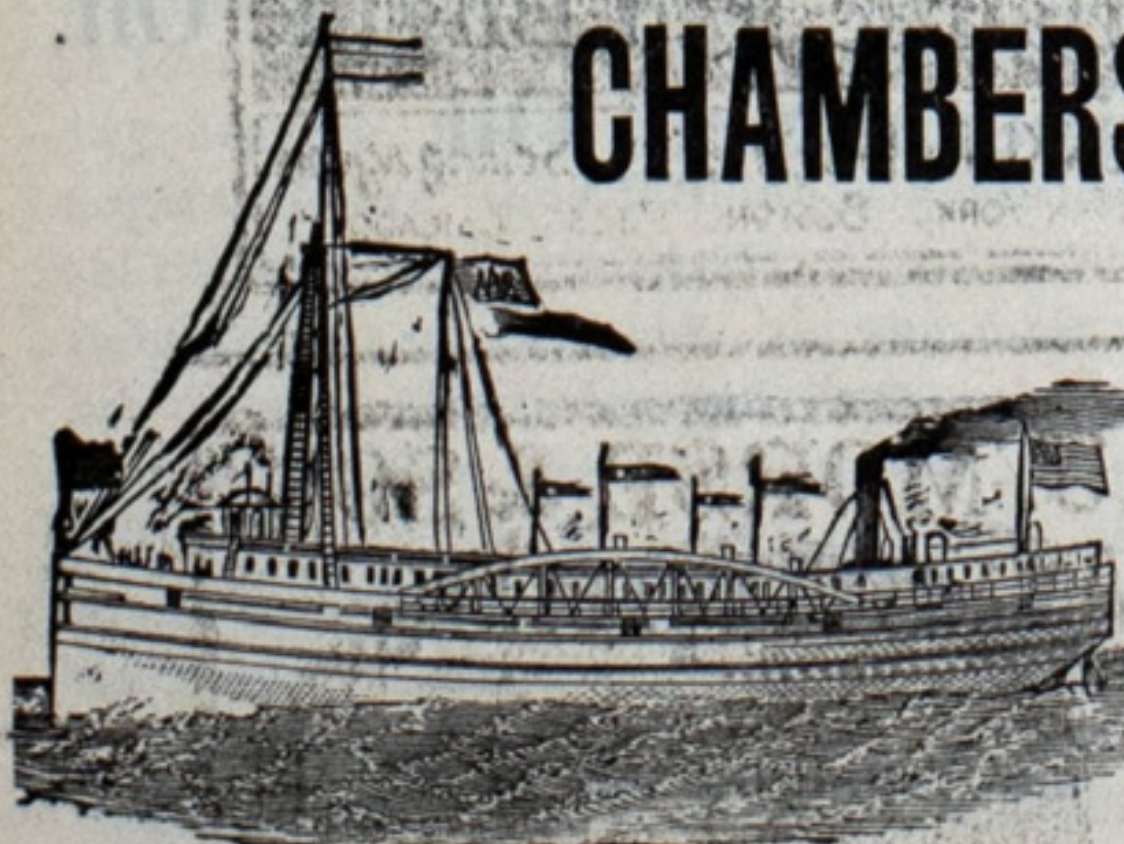
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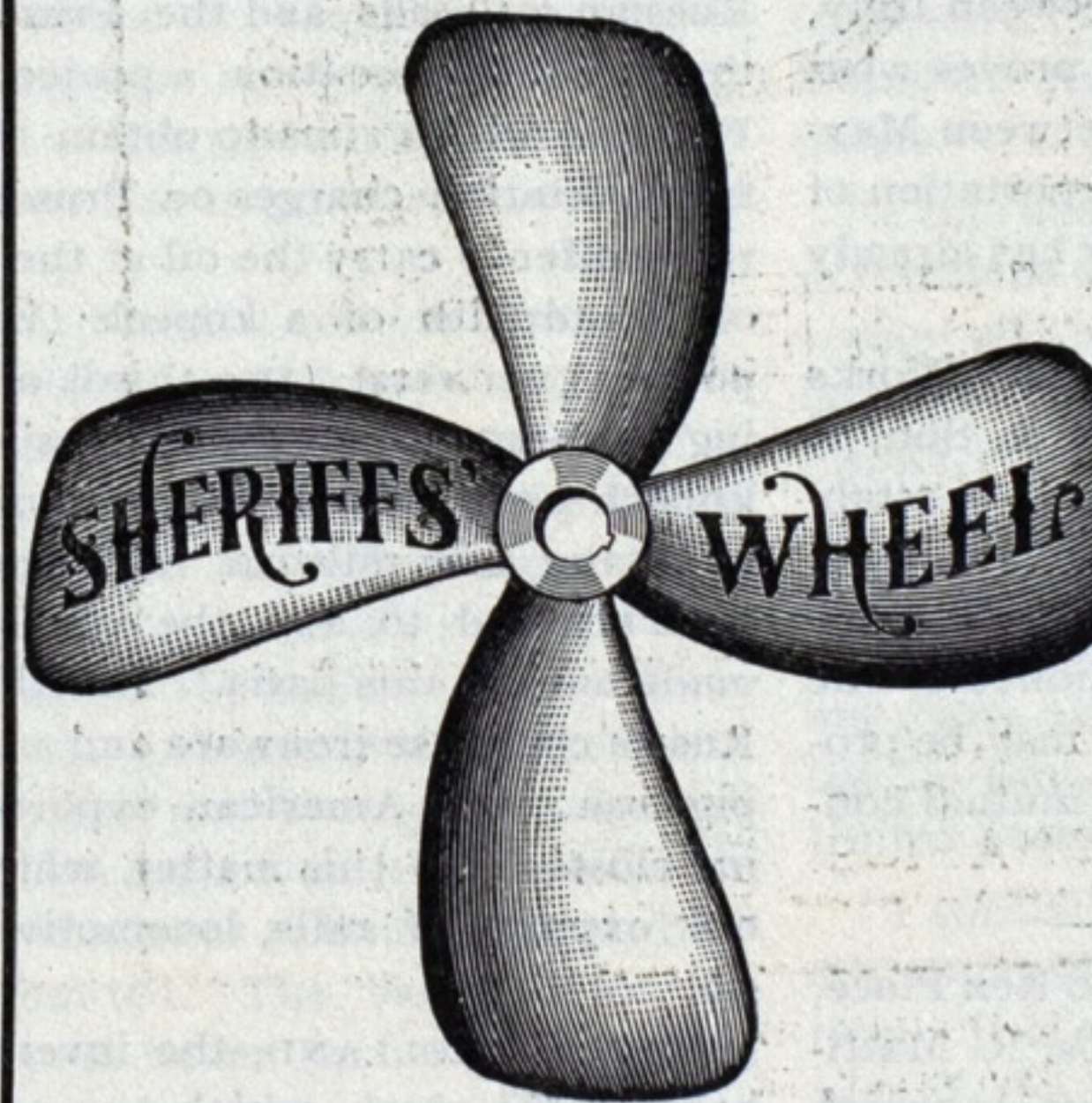
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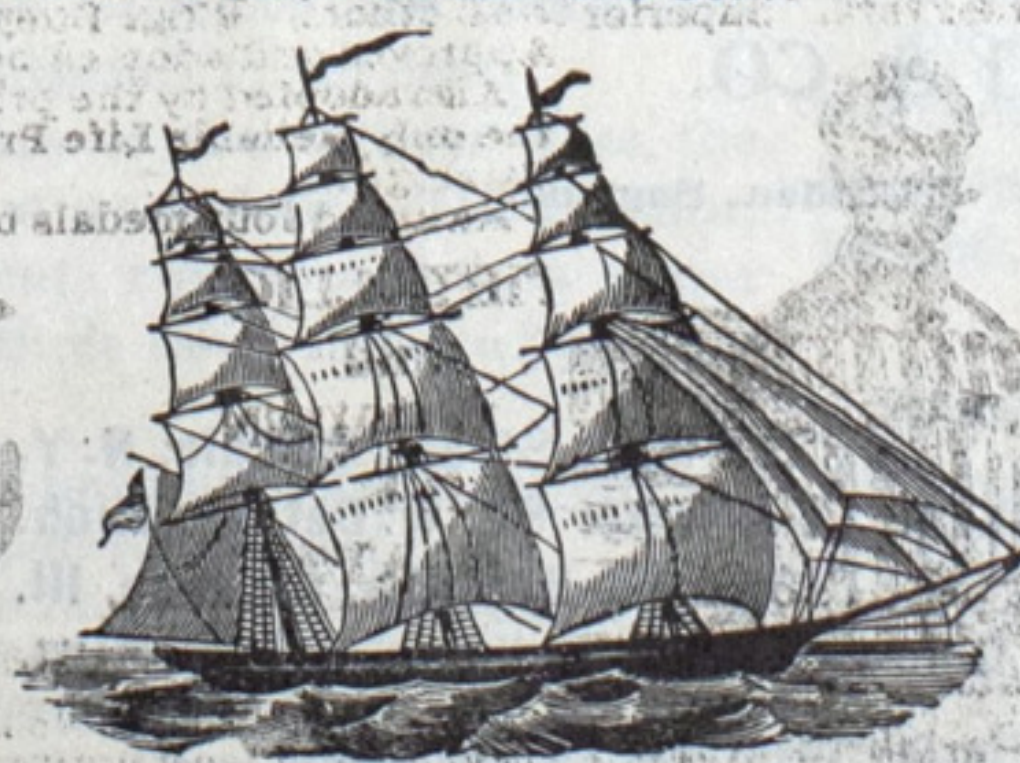
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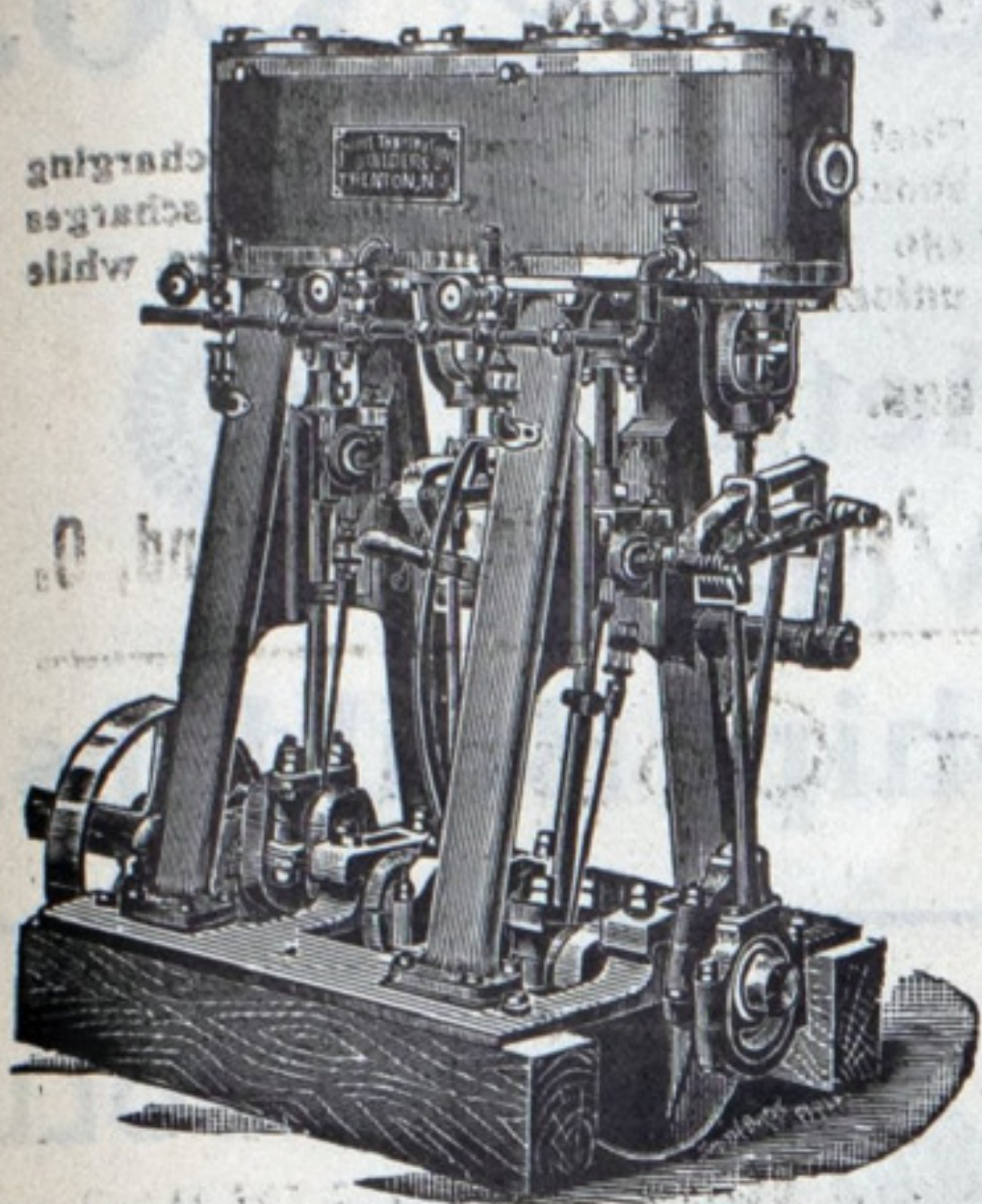
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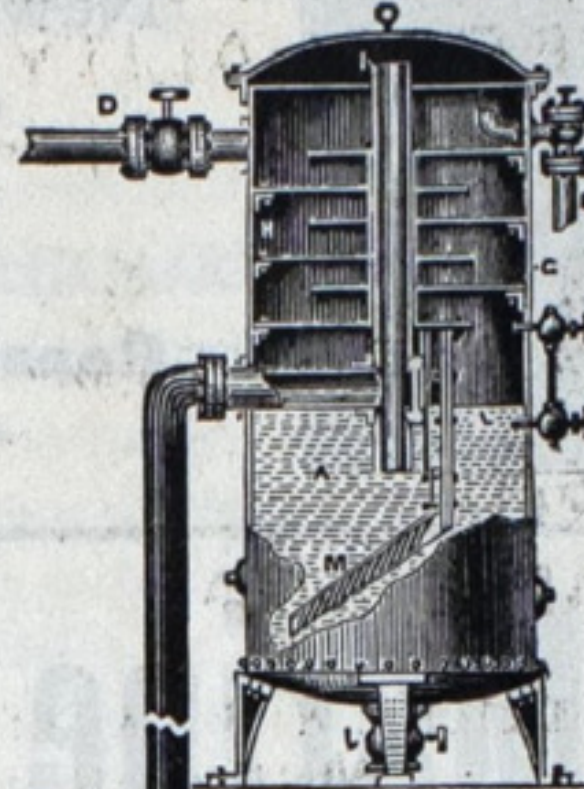
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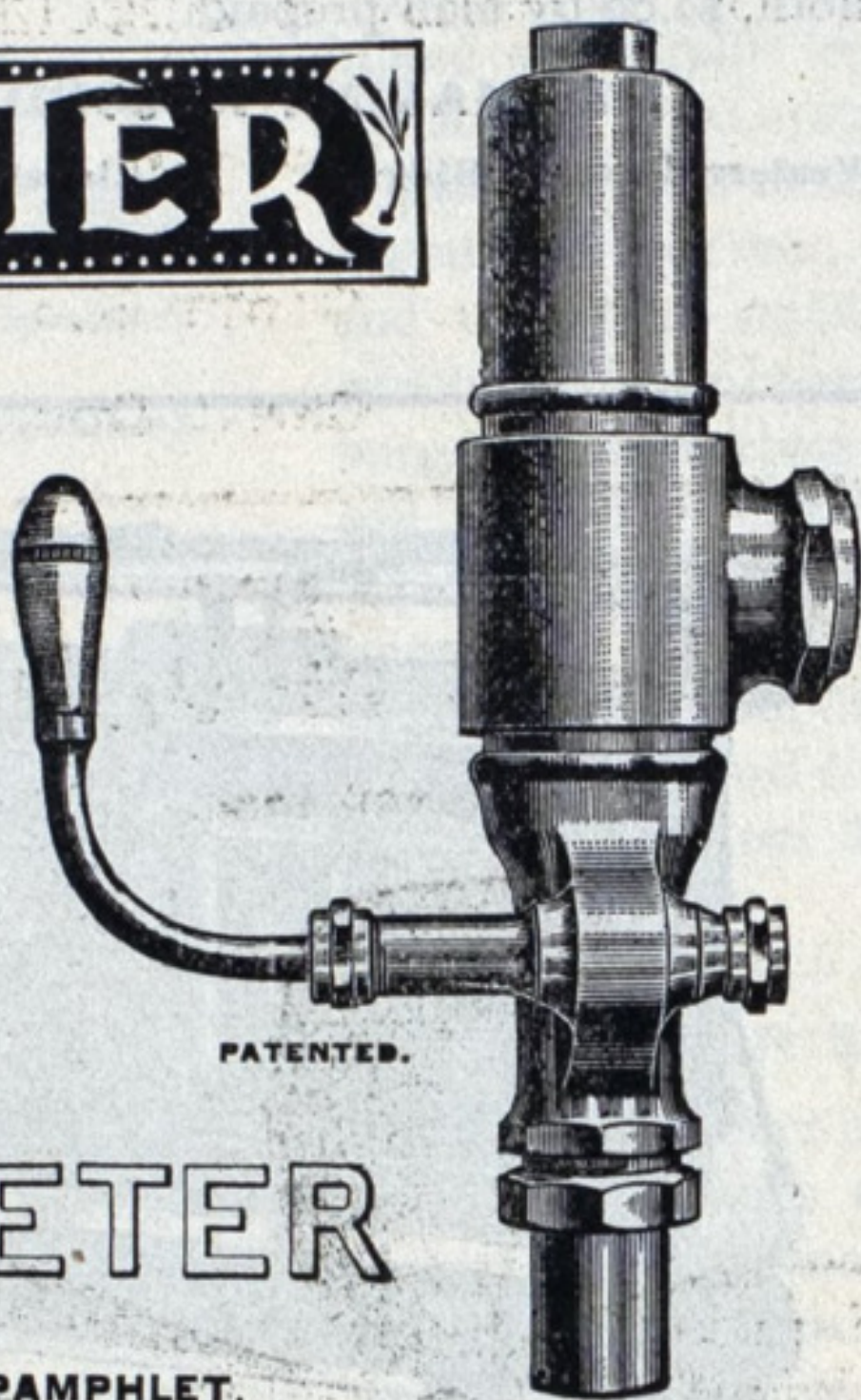
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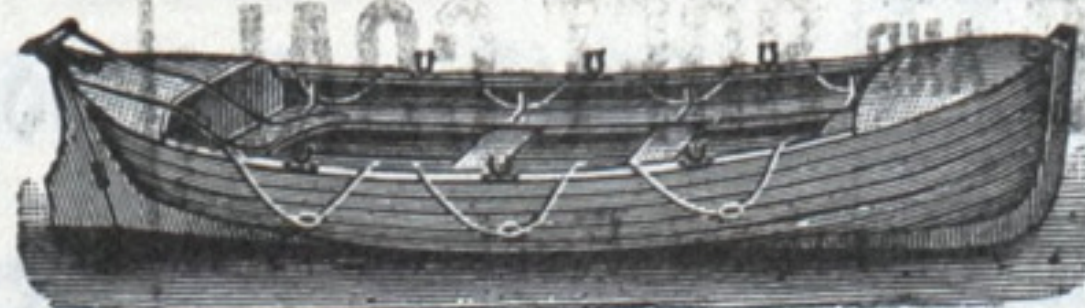
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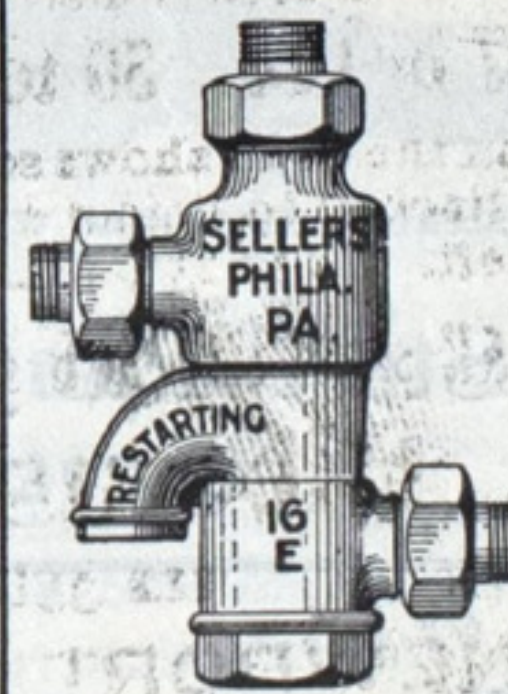
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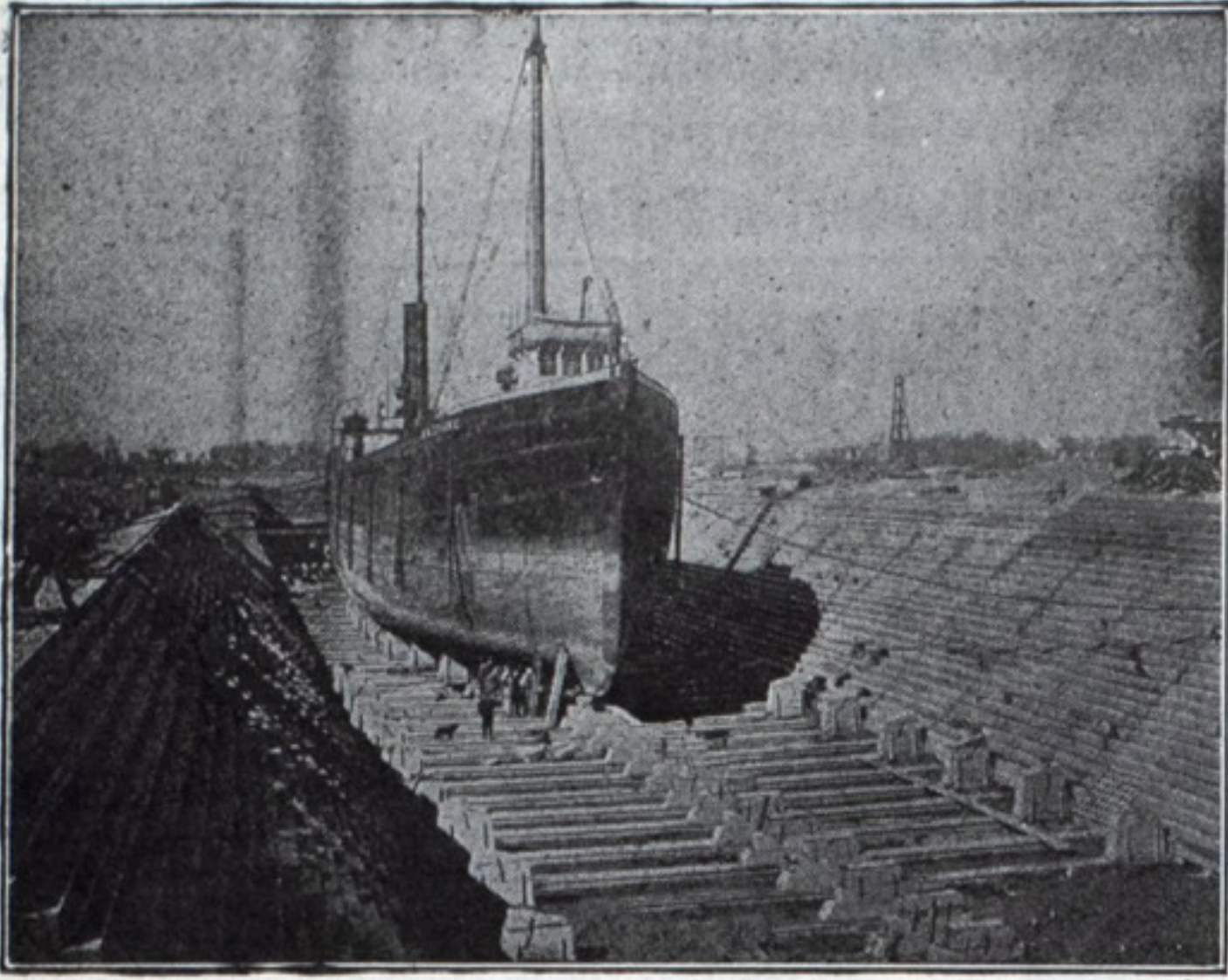
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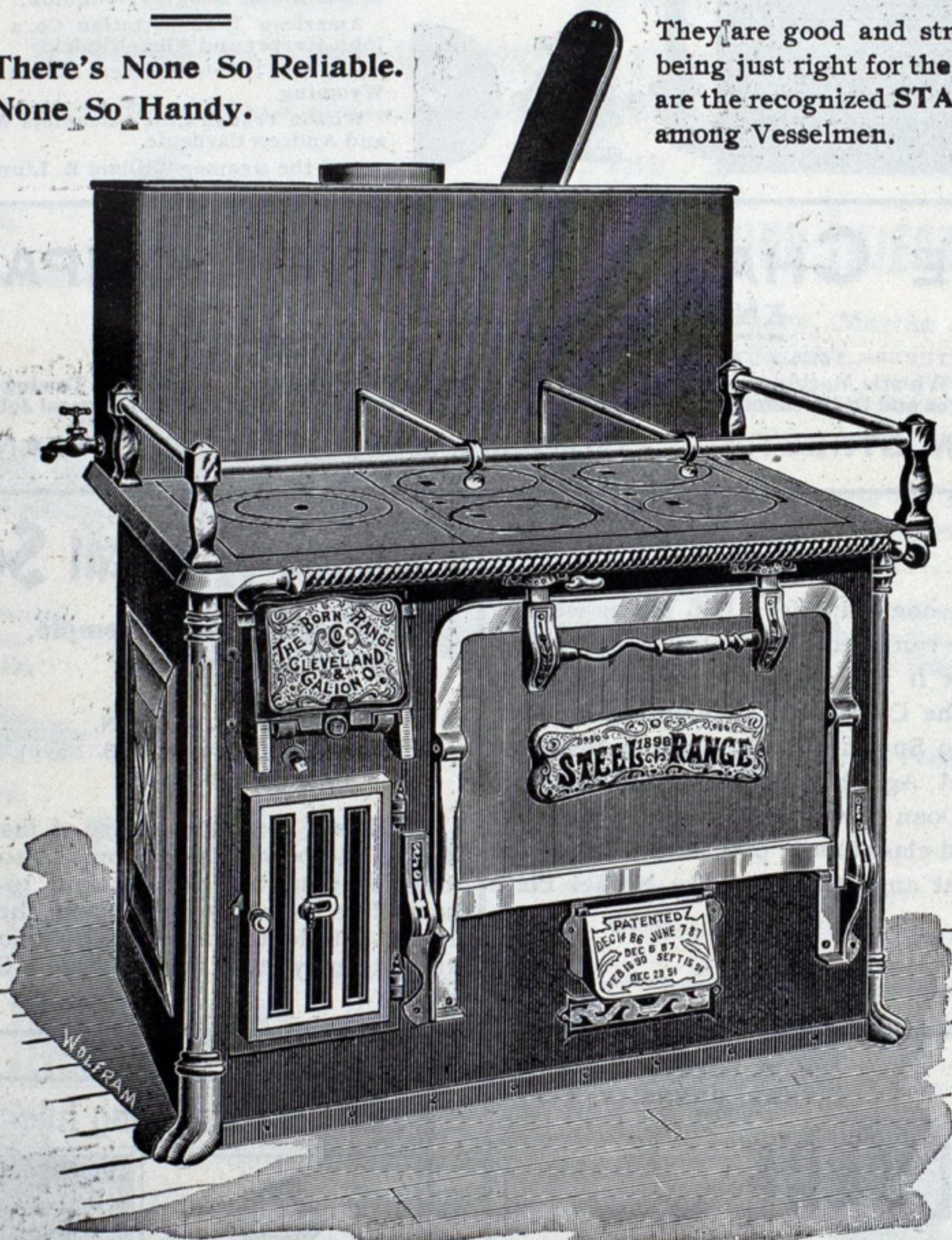
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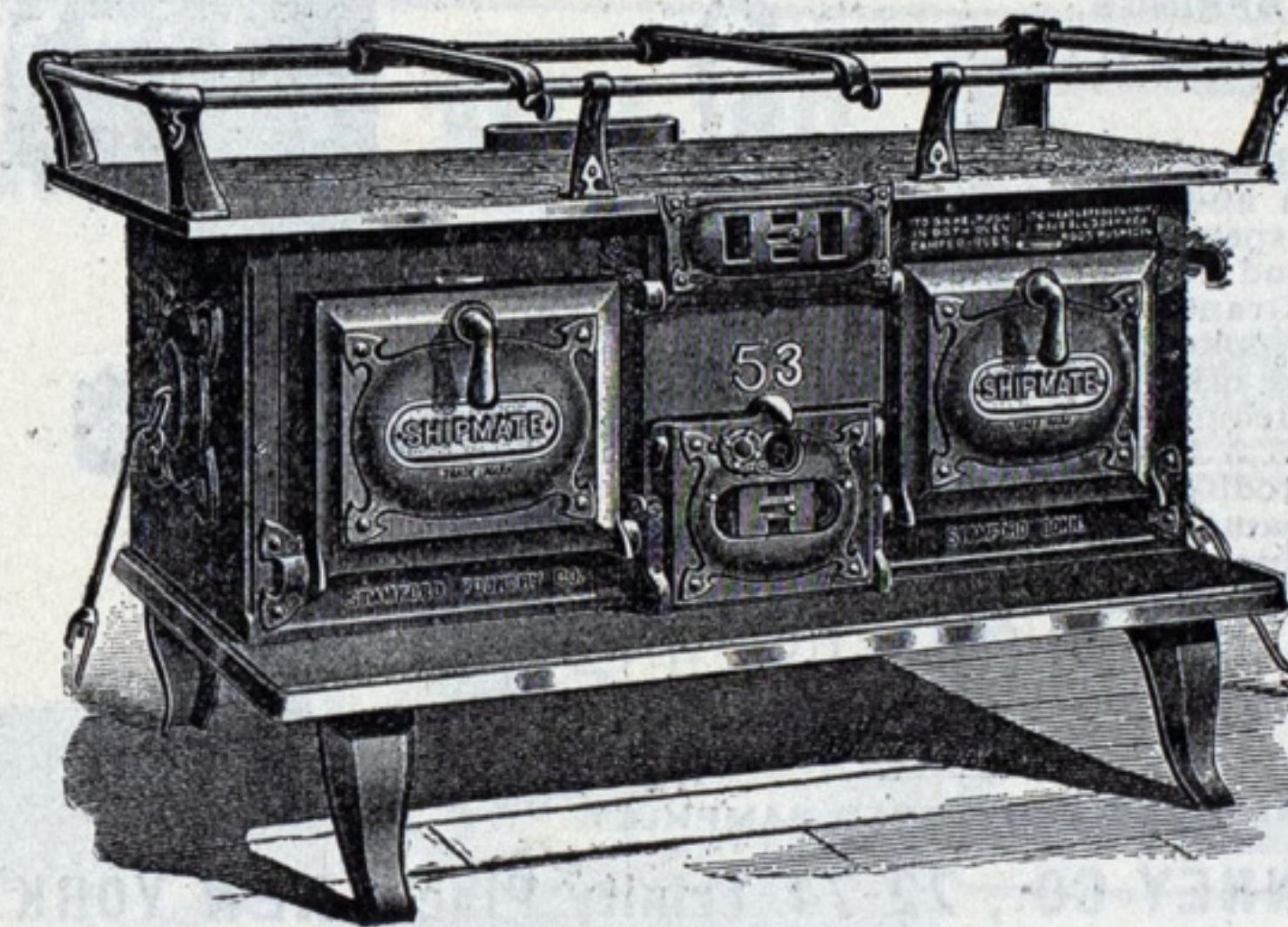
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